THE AMERICAN
JOURNAL OF PHARMACY.

DECEMBER, 1885.

PILLS AND EXCIPIENTS.

By Thomas S. Wiegand, Ph. G.

Read at the Pharmaceutical Meeting, November 17, 1885.

In the August number of the "Chicago Pharmacist" there appeared a paper upon pills, by Mr. Joseph Ince, taken from the "Pharmaceutical Journal and Transactions," of London. This with the examination of some pills of mercurous iodide, to which my attention had been directed, induced me to bring the subject before our meeting this afternoon. I do this with more pleasure as there are many here present who have not had sufficiently long experience to have attained that familiarity which practice and very extended observation can alone give them, that is necessary to decide the many points that are involved in the compounding of many of the prescriptions which direct the remedies to be dispensed in pillular form. It is hardly necessary to repeat the statements of the treatises on pharmacy, that the excipient should be in complete chemical as well as therapeutic accord with the medicines ordered; but, while it is admitted by all, very many, both of the prescribers and compounders, are either ignorant or negligent of these two laws.

The paper above alluded to, while giving a great many excellent formulas, has given some which are liable to very severe criticism, as a sample which I will submit will prove beyond all question. Another paper, published in the September number of the "Pharmaceutical Journal and Transactions," written by Mr. J. B. Morris, also contains hints and advice which, as it is almost impossible to find any full and systematic treatise upon this subject, it is well for all, especially the younger pharmaceutists, to gather up as a part of the knowledge which ere long must decide their claims for skill in this part of their calling.

Some years since, the writer, in an article in the "American Journal

of Pharmacy," 1870, page 195, advocated, among other substances, extract of gentian as a valuable material for assisting the dispenser of pills; and, while it is undoubtedly excellent for very many cases, its use must not be resorted to indiscriminately. All those remedies which are readily reduced by the glucose, which is contained in this extract to the extent of 30 per cent, must be massed with an excipient in which glucose is not present. This will exclude confection of roses, honey, glucose itself, and even cane sugar, as it is changed by moisture and the air.

The remedies which should never be made with the last named substances are calomel, mercurous iodide, permanganate of potassium, oxide and nitrate of silver, cupric oxide, etc. The sample here exhibited of a mass made with mercurous chloride (calomel) and manna, only three weeks since, has undergone such change as to resemble one made from mercury with chalk. This of itself is quite sufficient reason why it should not be used; but when such a mass is treated with distilled water for a time, and the clear liquor decanted, liquor potassa communicates a pinkish tinge and liquor ammonia a whitish cloud, evidencing the presence of mercuric chloride, a result which is necessarily attended with danger. While alluding to this change it may be worth while to state that the well known and very valuable prescription of calomel, sodium bicarbonate and sugar will undergo similar change by exposure to the air, and hence the caution to have such powders frequently made, or only prepared when demanded by the immediate occasion.

It will be found for most of the readily reduced salts that a mixture of glycerin in which 4 per cent. of finely dusted tragacanth has been mixed, and kept for 24 hours before use, is a most admirable excipient; calomel and mercurous iodide pills are thus very well made. For nitrate of silver and permanganate of potassium, fullers' earth, which is principally silicate of alumina, is the most desirable substance, as any organic matter has the immediate effect of decomposing the salts.

The following formulas will enable us to overcome these difficulties: Nitrate of silver gr. viii, fullers' earth gr. xvi, water *q. s.*; ft. mas.; to be divided into xvi pills; reduce the nitrate of silver to powder, add the fullers' earth and rub till intimately mixed, when the water should be added until a good mass is secured. Potassium permanganate gr. xvi, fullers' earth gr. xxiv, water *q. s.*; divide in pills xvi; the permanganate should be powdered in a *perfectly clean*

mortar, the fullers' earth added, thoroughly mixed, and formed into a mass with water.

Another class of substances which are frequently troublesome are the resins and gum resins, and, by many, alcohol in small quantities is recommended, to enable the operator to obtain a plastic, tough mass, which it certainly accomplishes; at the same time the pill as it becomes old gets harder, and almost inert; while the use of Castile soap secures the former quality, and renders the mass soluble in the juices of the stomach. This excipient we have found most successful in making a satisfactory mass with camphor alone, or even with it and powdered capsicum, which is well known to be a most difficult combination to form into a good mass. A small quantity of powdered resin when added to camphor will also enable the dispenser to make pills quite easily and of small size; it must be used quite sparingly, or the pills in a short time will become so soft that they will lose their shape.

Pills in which any essential oil is an important constituent are also well known to be troublesome to the dispenser, who feels that he must conscientiously fulfill the order of the prescriber, and this we have found is most thoroughly attained by the use of powdered Castile soap. A formula which will serve as typical is as follows: ℞ Aloes pulv. gr. xii, podophyllin gr. iv, oil of hedeoma gtt. xxiv, pulv. sapon. hisp. gr. xii. Rub the oil and soap together till a smooth mixture is attained, then add the aloes and podophyllin, previously well mixed; make into a mass, and divide into 12 pills.

Creasote is also readily made into pills in the same manner. Pill masses containing deliquescent salts can be made by means of Canada balsam, or of soluble cream of tartar. The administration of deliquescent salts in pills is not frequent, and needs less notice than the ferruginous and scaled salts; these are of frequent demand, and several formulas have caused great annoyance to dispensers, Blaud's pills being one of them. The use of a portion of dried ferrous sulphate, equivalent to the crystals ordered, has been found to overcome the difficulty, glycerin and tragacanth, as before described, being used as an excipient; the method of procedure being to rub the ferrous sulphate and potassium carbonate separately with a small portion of the glycerin, then mix them thoroughly. Should the mass be too soft, a small amount of tragacanth dust may be added.

The use of manna has been alluded to in the first part of this paper,

and while it is objectionable for some purposes, the writer does not wish to condemn its employment in many instances, as it is very well used in connection with small doses of quinine, morphine and the alkaloids; when these, however, are to be used in large sized pills, the quantity required is objectionable, and it may be replaced with advantage by glucose.

The frequent use of phosphorus in pillular form of late years makes it desirable to present a formula which will enable the dispenser to compound almost any of the prescriptions in which it is ordered. This is readily accomplished by keeping a mixture of phosphorus in butter of cacao, in the proportion of 1 grain to 15 of butter of cacao. The best method of preparing this is to put the phosphorus in a test-tube, cover it with a small quantity of the butter of cacao, and melt it and the fat by dipping the tube in hot water, when the remainder of the butter is added and well mixed. Of course in using this the mass is best kept surrounded with a vapor of chloroform, to prevent oxidation. When finished, the pills are to be coated with an ethereal solution of tolu.

In concluding these notes the writer hopes to show the results of some of these formulas, which want of time has prevented him from exhibiting to the meeting.

ADDITIONAL NOTE ON COCAINE HYDROCHLORATE.

By A. B. Lyons, M.D.

In a recent article on the salts of cocaine, the writer expressed the opinion that cocaine hydrochlorate formed crystals, even from an aqueous solution, which were anhydrous (see page 469). Subsequent experiment has shown that this is not the case. The crystals which form in an aqueous solution contain in fact two molecules, or 9·6 per cent. of water of crystallization. Such crystals are now met with in commerce, commanding a higher price than the smaller anhydrous crystals, which have, of course, greater intrinsic value.

Small crystals, also, are now met with, or a salt having only an indistinctly crystalline character, which contains either water of crystallization or hygroscopic moisture, to the amount of 6 or 8 per cent. of its weight. It is highly desirable that in any official description of the salt the quantity of water of crystallization admissible be distinctly

stated, and manufacturers should place on their labels a statement of the proportion which their product actually contains.

The description given of this salt in the new British Pharmacopœia contains the erroneous statement that it is readily soluble in ether, and otherwise characterizes the salt in a very imperfect manner. The description given of coca leaves, as having a "taste somewhat bitter and aromatic," omits certainly the most important characteristic of the drug—its benumbing effect, lacking which the leaves may be safely pronounced of no value.

ON AN INDIGENOUS SPECIES OF CROTON.[1]

By John M. Maisch.

A few months ago I was consulted about a plant which had been sent to this city by a farmer in the State of Georgia, with a letter in which the following statements were made concerning the properties of this plant:

"I do not know whether it will cure hay-fever, catarrh, consumption, or not; but I do know that it will cure several diseases. A tea made from this plant will give instant relief in cramp colic, will stop diarrhœa, and, by gargling, will cure sore throat, also any kind of ulcers in the mouth; it will also cure the colic in horses. A man was cured of eating cancer by the use of this plant; but I do not know how he prepared it. When the green plant is cut a drop of bloody water runs out; this blood applied on any kind of bruise, cut or bite will beat anything for healing that I have ever tried or seen tried; it will also stop the flow of blood. The plant appears to be perfectly harmless; I never heard of any one being injured by it."

It was not the extravagant statements made by a non-medical man that attracted my attention, but the fact that the plant proved to be a species of Croton, which genus comprises about 450 species, the large majority of which are arborescent or shrubby. The stimulant and tonic barks known as cascarilla, malambo and copalchi are obtained from this genus; the drastic and irritating croton oil is extracted from the seeds of one species, and a kind of dragon's blood is yielded by several Mexican and South American crotons. In addition to the preceding, other woody species of the same genus, indigenous to tropical Asia or tropical America, are more or less employed there, their properties being usually stimulant or acrid, or in some cases irritant.

[1] Read at the Pharmaceutical Meeting, November 17, 1885.

None of the herbaceous species of Croton appear to have been medicinally employed. In some older works Croton chamædrifolius, *Lamarck*, a perennial herb growing in the West Indian Islands, is mentioned as being used as a vulnerary and in various forms of tumors. But the plant has been transferred to another genus, and is now known as Acalypha chamædrifolia, *De Candolle*, while the Croton chamædrifolius, *Grisebach*, is an annual plant, and does not seem to have been used in medicine.

Croton tinctorius, *Linné*, an annual plant of the Mediterranean region, has likewise been transferred to another genus; it is now Crozophora tinctoria, *A. Jussieu*, or Tournesolia tinctoria, *Baillon*. It is cultivated in France, the cultivation being confined to Grand-Gallargues, a village in the neighborhood of Nîmes. The greenish juice in contact with ammoniacal liquids yields a kind of litmus, which turns red by acids, but does not become blue again under the influence of alkalies. Paint rags are made by dipping pieces of muslin into the juice and exposing them to the ammoniacal vapors arising from a mixture of urine and lime, or from horse-dung, until the desired color is produced. This material is stated to be mostly exported to Holland, where it is used for the coloring of cheese and of certain liquors.

Five or six herbaceous species are indigenous to the United States east of the Mississippi, three of which, all annuals, occur northward as far as Illinois and Virginia, while the perennial species Croton maritimum, *Walter*, and Cr. argyranthemum, *Michaux*, do not appear to extend northward beyond South Carolina. The last named species is the plant, the curative properties of which have been referred to above. The nearly simple root is from 2 to 3 inches long, about $\frac{1}{2}$ inch thick at the neck, crowned with a broader irregular head formed from the stem bases, of a light gray-brown color, and breaks with a short non-fibrous fracture, which is whitish and shows a thickish bark, the inner layer of which is of a red color, and a porous meditullium without medullary rays. The stem is about 12 or 18 inches high, branched, rather firm, and the lower portion somewhat woody; the leaves are alternate, about 1 or $1\frac{1}{2}$ inch long, with petioles of $\frac{3}{8}$ to $\frac{5}{8}$ inch in length, firm and thick, oval, oblong or obovate in shape, entire on the margin, rather obtuse at the apex, and narrowed at the base; the midrib is rather prominent on the lower surface; but its branches are quite indistinct. The flowers are of a silvery whiteness and form

short terminal spikes, at the base of which the pistillate flowers are placed. All the aerial parts of the plant are densely covered with scales, imparting a peculiar lustre; these scales have become detached from the older portion of the stem, leaving minute circular scars, which remain visible for some time. Similar scars are also observed on the older leaves, particularly on the upper surface. The scales are formed of small glands, about 0·1 Mm. in diameter, and filled with a red mass; to these glands are attached from 50 to 60 colorless, elongated and stellately arranged cells, which project about 0·1 Mm., or a little more, beyond the gland, and are laterally cohering, except at the apex, which is free, pointed and usually somewhat curved or slightly hooked. The total width of the scales is about 0·3 Mm., or $\frac{1}{40}$ inch. The scales on the branches and on the leaves are alike. The root has a slightly aromatic and a more prominent and rather pleasant bitter taste. The leaves are more aromatic, and are decidedly pungent.

As far as may be judged from the physical properties, this plant probably does not possess any decided or very important medicinal virtues; still, in view of the reputation enjoyed by a number of the woody species of the same genus, it seems to be deserving of investigation. This was suggested more than twenty years ago by Prof. F. P. Porcher, in his "Resources of the Southern Fields and Forests;" the plant specially mentioned by him, Croton maritimum, is likewise covered with a silvery scurf, but it is confined to the coast districts, and has broadly oval and subcordate leaves.

MATERIA MEDICA NOTES.

Abstracts from Theses.

Cultivation of Peppermint in Michigan.—From his personal observations in the peppermint plantations, and from information received from mint growers, Dennis Reagan, Ph.G., describes the cultivation to be the same as was stated by M. Fred. Stearns, in 1858 (see "Amer. Jour. Phar.," 1859, p. 35), except that the planting is done annually, the runners of the preceding year being used for the purpose. If the plants are raised from seeds in a nursery, they are reset every two years. Peppermint does not sprout freely after the second year, unless the soil is very rich and loose and the preceding summer has been wet and warm, or the ground is boggy.

The oil obtained per acre varies between three and twenty-six pounds, the average being about sixteen pounds; new mint generally yields a few pounds more than the old, the quality of the oil being the same. The principal weed growing in mint fields is Erigeron canadense, *Lin.;* the large growers remove it carefully from the field, and plants which are overlooked are separated from the cut mint, which is smaller. Erechthites hieracifolia, *Raf.*, grows only in new clearings. Both these weeds are sometimes distilled separately, and the oils are occasionally used for adulterating oil of peppermint; oil of turpentine is also used for the same purpose. Oil of peppermint, when pure, is said to be rather slowly absorbed if dropped upon blotting paper, while it is at once absorbed if adulterated with any one of the three oils mentioned.

Assays of Cinchona Barks.—Henry Brandner, Jr., Ph.G., obtained by the pharmacopœial process the following amounts of total alkaloids. Bark represented to be

Cinch. succirubra	contained	7·78	per cent.	moisture	and yielded	3·50	per cent.	alkaloids.
" Calisaya, flat,	"	8·02	"	"	"	2·14	"	"
" " quills,	"	7·63	"	"	"	2·572	"	"

The test for quinine, as directed by the Pharmacopœia, gave negative results, and the solutions of the alkaloids yielded no characteristic color with chlorine water and ammonia, nor with chlorine water, potassium ferrocyanide and ammonia. The nature of the alkaloids was not ascertained.

Ailanthus glandulosa, Desfontaines.—Fred. Horace Davis, Ph.G., has subjected the bark of this tree to proximate analysis; it is not stated whether the bark of the branches or of the trunk was used for the purpose.

By exsiccation at 100°C., the air dry bark lost 7 per cent. of moisture, and on incineration yielded 5·92 per cent. of ash; of the latter 25·8 per cent. was soluble in water (potassium and sodium chloride and phosphate), and the insoluble portion contained calcium, magnesium and iron as carbonate, sulphate and phosphate. The bark was successively treated with petroleum benzin, ether, alcohol, cold water, boiling water and dilute acid; fixed oil, chlorophyll, resin, wax, sugar, tannin, albumen, gum, starch, pectin, oxalic acid and probably another crystallizable organic acid, soluble in alcohol, were obtained. Distillation with water yielded a trace of volatile oil. Alkaloids and glucosides could not be detected.

MATERIA MEDICA OF THE NEW MEXICAN PHARMACOPŒIA.

By the Editor.

(Continued from page 556.)

Genciana. Although Gentiana calyculata, G. mexicana, G. Hartwegi and other species of this genus are indigenous to Mexico, and several of them are abundant, they are not employed medicinally, but the root of G. lutea is used. The first named species is known as Flor de Santo Domingo, or Flor de nieve (snowflower).

Gobernadora de Mexico, Zygophyllum Fabago, *Lin.;* Zygophyllaceæ; grows in Mexico, but is indigenous to the Orient. The leaves are popularly used in baths and fomentations for relieving rheumatic pains, and the fruit preserved in vinegar like capers, hence the common name falsa alcaparra, and in English bean caper.

Gobernadora de Puebla, Eupatorium veronicæfolium, *Kunth;* Compositæ; in the neighborhood of Puebla. The leaves are used like the preceding.

Goma de Sonora is an exudation of Mimosa laccifera, produced by the hemipterous insect, Carteria mexicana, *Comstock.* It resembles grain-lac, from which it differs in being less deeply red, in having a taste resembling that of succinic acid, and in becoming elastic when heated; it is used against metrorrhagies.

Goma mangle; from Rhizophora Mangle, *Lin.;* Rhizophoraceæ; in Tampico and other coast districts. It forms rather voluminous masses or separate tears, 5 Cm. or more thick, is reddish-brown externally, dark red internally, hard, breaks with a conchoidal and opaque fracture, and has a sweetish mucilaginous taste and a peculiar odor. It dissolves in water without leaving any residue except the impurities, forming a mucilage of less consistency than that of gum mezquite.

Another variety of goma mangle, obtained from Rhizophora Candel, *Lin.*, is in distinct slightly adhering tears, externally scaly, glossy, transparent, of little hardness, breaking with an uneven shining fracture, inodorous, of a mucilaginous taste, and dissolves less freely in water, but swells up and forms a thinner mucilage.

The gum is used in the Philippine Islands as a febrifuge, and in Mexico for relieving cough. The fruit is edible. The bark and also the fruit are used for tanning.

Goma de nopal. See page 450.

Gordolobo del país, Gnaphalium canescens, *De Cand.;* Compositæ; in temperate regions of Mexico. The flowers of this species, as well as of Gn. Berlandieri, *De Cand.;* Gn. hirtum, *Humb.*, and Gn. viscosum, *Humb.*, which are abundant near the capital, are used as a substitute for mullein as an emollient and pectoral.

Guaco, Aristolochia fragrantissima, *Ruiz et Pavon;* Aristolochiaceæ; in Colima, etc. The branches, which are stimulant and antispasmodic, are woody and twining; the bark is gray, thick and fissured; the cork rolled up; the wood whitish and with large ducts; the odor aromatic, resembling that of French marigold (Tagetes), and the taste bitter and aromatic. The drug contains a volatile oil, tannin, resin, bitter principle, gum, starch and salts. It enjoys considerable reputation as an antidote to poisoning by scorpions, vipers and other animals, and is used externally in purulent ophthalmia, blennorrhagia, chronic ulcers, vaginitis, etc. The powder is given in doses of 1 to 5 Gm., and an infusion is made containing 20 Gm. to the liter. Arist. grandiflora, *Swartz*, has analogous properties, and in Yucatan the guaco de San Cristóbal, Ar. pentandra, *Lin.*, is similarly employed.

In a similar manner are also employed the stems and leaves of different species of Mikania (Compositæ), namely, M. Guaco, *Kunth*, guaco de Tabasco or de Guatemala; M. Houstonis, guaco de Veracruz; and M. Gonvelada, guaco de Tampico.

Guarana, from the seeds of Paullinia sorbilis, *Martius.* The seeds of the Mexican species P. barbadensis, *Jacquin;* P. costata, *Schlechtendal*, and P. pinnata, *Lin.*, may perhaps be made to yield a similar preparation.

Guayabo, Psidium pomiferum, *L.*, and Ps. pyriferum, *L.;* Myrtaceæ; in hot and moist districts. The bark contains tannin 12 1, sugar and other matters soluble in water 13·8, resin and chlorophyll 1·7, calcium oxalate 30·8 per cent., etc. The root and bark are used as astringents in diarrhœa; the leaves as a vulnerary and resolvent, and the fruit as an anthelmintic and aliment.

Habilla de San Ignacio, the seed of Hura crepitans, *Lin.;* Euphorbiaceæ; in hot and moist districts. The seeds contain 50 per cent. of fixed oil, and are used as a drastic in doses of 0·05 to 0·10 Gm. They should not be confounded with Haba de San Ignacio or Cabalonga, the seeds of Strychnos Ignatii.

Hanchinol, Heimia syphilitica, *De Cand.*, and H. salicifolia, *Link;* Lythraceæ; in the State of Mexico. The leaves contain, according to

Alas, fat and chlorophyll 12, extractive and resin 14, bitter principle 9, gum 18, tannin 15, salts 5, tissue 27 per cent.; the resin is stated to be the active portion. The decoction is used as an antisyphilitic, and topically for the cure of ulcers. Alas states that the alcoholic extract is a good hemostatic, and the bitter principle, *nessine*, has febrifuge properties.

Heno, Tillandsia usneoides, *Lin.;* Bromeliaceæ; in the Mexican valley, etc. The plant is used as an astringent. This is the so-called *long moss* of our Southern States.

Hipericon. Under this name the flowering tops of several species of Hypericum are used for their astringent and balsamic properties, namely H. perforatum, *Lin.*, var. mexicanum (?), H. denticulatum, H. fastigiatum, H. formosum, *Humboldt et Bonpland.* A composite plant, Tagetes lucida, *Cav.*, vulgarly known as periquillo, is sometimes used in the place of the former.

Hisopo de México, Salvia axillaris, *Mociño et Sessé;* Labiatæ; in Guadalajara, etc. Reputed to possess the properties of hyssop. The leaves are linear-oblong, acute, entire, narrowed at the base, and rough-hairy; the axillary verticils contain 2 to 6 flowers. The plant resembles thyme in aspect, and has an aromatic odor and bitter taste. Verbena ciliata, the alfombrilla silvestre, which is often substituted for the former, is sufficiently distinguished by being inodorous. Salvia polystachya, *Ortega*, and Salvia linearis, *Mociño*, are also frequently called hyssop.

Hojas de San Pedro, Daphne salicifolia, *Kunth;* Thymelaceæ; in the State of Morelos. The leaves are epispastic; the bark might probably be used as a substitute for mezereon.

Huacamote is the starch of Manihot Aipi, *Pohl.*

Huamuchil, Mimosa Unguis-cati, *Willdenow;* Leguminosæ; in the hot and moist regions of the eastern slope of the Mexican cordillera. The bark is astringent; the fruit is edible, the juice of the seed produces an abundant secretion of the nose, and the powder is used for cleaning ulcers from maggots and for cicatrizing old ulcers.

Huanita, Morelosia Huanita, *La Llave et Lexarza;* Boraginaceæ; in the State of Michoacan. The bark is used as an antiperiodic and astringent.

Huauzontle, Blitum Bonus-Henricus, *Reichenbach;* Chenopodiaceæ. The flowering tops are laxative.

Huinar, Malva scoparia, *Cavanilles;* Malvaceæ; in temperate districts. The root has considerable reputation in the cure of diarrhœas.

Incienso (olibanum), Ipecacuana blanca (Richardsonia scabra), Ipecacuana de las minas de Oro (Psychotria emetica), Ipecacuana oficinal, Jaborandi (Pilocarpus), Jalapa oficinal, Jalapa macho (Orizaba root), Jalapa de Tampico, Jaldre (yellow orpiment), Jengibre (ginger), Jitomate (tomato; fruit used as an anodyne), Kamala, Lactucario, Lanten (Plantago major, etc.), Laurel (Laurus nobilis), Lechuca (lettuce), Lenteja, Lentejilla or Panal (Lepidium virginicum, *Lin.;* in diarrhœa), Licopodio (lycopodium), Limon, Linaza (flax seed), Líquen Carragaheen, Líquen de Islandia, Lirio de Florencia (orris root), Lobelia (Lob. inflata), Lúpulo (hops) have all been admitted.

Ipecacuana del país, Solea verticillata, *Sprengel;* Violaceæ; on the hills of Santa Fe, west of the capital, etc. Cervantes Vicente found it (the root?) to be a good substitute for the officinal ipecac, if taken in doses double of those of the latter.

Jalapa de Querétaro, Ipomœa triflora, *Velasco.* The root is met with in circular fragments, about 10 Cm. broad and 2 Cm. thick; color gray on the flat, and darker on the convex portions; superficially rough from many gray fibres; odor and taste almost none. M. C. Jimenez ("La Naturaleza," i, 338) obtained from the drug brown extract (aqueous?) 14, resin 16, salts 10·5 per cent., etc. The resin is light yellow, when powdered nearly white, insipid, inodorous, soluble in ammonia with a green-yellow color, partly soluble and partly insoluble in ether. The drug is a drastic purgative; dose of the powder 1 to 2 Gm.; the extract 0·20 to 0·40 Gm.; the resin 0·10 to 0·30 Gm., and the tincture 2 to 4 Gm.

GLEANINGS FROM FOREIGN JOURNALS.

By Geo. H. Ochse, Ph.G.

Nerolin.—Under the name of Nerolin, Messrs. Schimmel & Co. have placed on the market a white crystalline powder, soluble in 30 parts of 95 per cent. alcohol and in 25 parts of the fixed oils, sparingly soluble in water, as a substitute of the expensive oil of neroli. One part of nerolin is equivalent to ten parts of the oil. Several soap manufacturers use nerolin in the proportion of 20 to 30 Gm. to 100 kilos of soap.—*Pharm. Centralhalle,* xxvi, No. 43.

Acetic Ether in Poisoning by Illuminating Gas.—Dr. Leube states that he has used acetic ether where employees in gas-works had

become insensible from the inhalation of illuminating gas. He gives several drops on sugar, the patients soon revive, and in a very short time are again able to work.—*Archiv der Pharm.*, 1885, p. 716.

Metallic Magnesium in Fireworks.—The addition of 2½ per cent. of powdered magnesium entirely conceals the green flame produced by barium salts, giving them a bright white light, similar to the electric light; to the strontium flame it imparts an extraordinary brilliancy. The following formulas yield good results: *White Light.*—Shellac 1 part, nitrate of barium 6 parts; add 2½ per cent. powdered magnesium. *Red Fire.*—Shellac 1 part, nitrate of strontium 5 parts; add 2½ per cent. powdered magnesium. The salts are mixed with the shellac, the mass fused and powdered; then the magnesium is added. —*Arch. d. Pharm.*, 1885, p. 714.

Sublimation of Oxalic Acid.—According to M. Siegfried, oxalic acid sublimes at several degrees below 100°C.

Iodol, a New Antiseptic.—Iodol manufactured by Silber and Ciamicina in Rome has been used in the surgical clinics of Mazzoni. Dr. Mazzoni finds iodol free from the disagreeable odor of iodoform, and does not produce symptoms of intoxication. It is a powerful antiseptic, aiding the formation of healthy granulations and occasionally producing local anæsthesia. Iodol is prepared from volatile animal oil by precipitating the pyrrol with a solution of iodine in iodide of potassium, thus forming pyrrol tetraiodide, or iodol. It is a brown powder, capable of being heated to 100°C. without decomposition; at a higher temperature it is decomposed, giving off iodine vapors and leaving a voluminous coke as residue. Iodol is very slightly soluble in water, and readily soluble in strong alcohol, but precipitated again on adding water. The addition of glycerin to the alcoholic solution does not precipitate it. Ether and chloroform also dissolve it. Tests: Sulphuric acid produces a green color, and by heating the alcoholic solution to which nitric acid has been added a bright red color is produced.—*Rundschau*, xi, p. 668.

Syrup of Hippurate of Calcium.—℞ Acid hippuric, pure, 1; milk of lime, *q. s.*; hot water, 20 cc.: sugar 24; spirit of limon, 0·15. To a portion of the water, heated to 75 or 80°C., add the acid and milk of lime; agitate, and test from time to time with test paper, until the solution is slightly alkaline; add balance of water and sugar and heat over a gentle fire. The solution of hippurate of calcium is the same without the sugar.—*Répertoire de Pharmacie*, 1885, p. 434.

The benzin odor of old syrup of tolu is attributed to the action of the calcium salts of ordinary water on the balsam of tolu at a higher temperature. M. Labre bases his observation on Mitscherlich's synthesis of benzin, *i. e.*, distilling benzoate of calcium with quick lime, thus forming carbonate of calcium and benzin, $C_{14}H_6O_4+2CaO=2(CaO,CO_2)+C_{12}H_6$. Syrup of tolu made with distilled water does not acquire a benzin odor on standing.—*Répert. de Phar.*, Oct., 1885, p. 438.

Papaverine.—Dr. Guido Goldschmiedt states that the formula of papaverine as given by Hesse ($C_{21}H_{21}NO_4$) is incorrect. He proved by a number of experiments that the formula as originally given by Merck ($C_{20}H_{21}NO_4$) is correct.—*Pharmac. Post*, xviii, p. 1077.

To Detect Gamboge in Mixtures, etc.—Solutions containing gamboge are mixed with powdered glass, evaporated to dryness, powdered, and treated with benzin. If the benzin solution is colorless it is again shaken with the powder and sufficient hydrochloric acid to make the solution decidedly acid. Benzin does not dissolve gamboge in presence of soap. If after treating with benzin and acid the benzin solution is colorless, no gamboge is present. If, however, the solution has a yellow cast, it is filtered and tested as follows: To a small portion of the filtrate is added a dilute solution of caustic soda; if a red coloration is produced, gaseous ammonia is led into the remaining solution until it is saturated. The flakes which separate out are collected on a filter and washed with benzin before dissolving them in alcohol. This solution treated with an alcoholic solution of ferric chloride turns black, and on adding caustic soda the color changes from black to dark yellow, but never red, if gamboge is present. By this method Hirschsohn was able to detect 0·01 gram of gamboge.—*Phar. Zeit. f. Russl.*, xxiv, p. 609.

Impurities in Ether.—Boerrigter confirms the statement of other authors that ether frequently contains hydrogen peroxide and aldehyde. Ether should be kept in dry, tightly corked bottles. The ozone produced by the evaporation of ether, if water is present, converts it into hydrogen peroxide. Pure ether is not discolored by caustic potash, nor is alcohol affected by it unless air has access, when possibly aldehyde is formed.—*Phar. Zeit. f. Russl.*, xxiv, p. 584.

Digitalin, Digitalein and Digitin.—Digitalis is exhausted with water and the infusion is decolorized with animal charcoal, treated with acetate of lead and filtered. The filtrate is then treated with a mixture of 12 parts of liquor plumbi subacetatis and 1 part of spirit of ammo-

nia (liquor Dzondii). The precipitate, consisting of oxide of lead and the glucosides of digitalis, is washed on a filter, then made into a soft paste with water, and sulphuretted hydrogen passed into it. It is again placed on a filter; the filtrate contains all of the digitalein; but digitin and digitalin, being almost insoluble in water, remain on the filter together with the sulphide of lead. Chloroform dissolves the digitalin, and alcohol the digitin. Pure digitalin and digitin are obtained by evaporating the respective solutions. Picrotoxin and solanin are obtained in the same way, but are distinguished as follows:

The picrotoxin precipitate is mucilaginous, acquiring on the addition of concentrated sulphuric acid a saffron-yellow color.

The digitalin precipitate is gelatinous, and acquires a flesh color on the addition of concentrated sulphuric acid.

The solanin precipitate is granular, and on the addition of concentrated sulphuric acid turns dark; if sugar is added it assumes s violet color, gradually turning to blue.—*Phar. Zeit. f. Russl.*, xxiv, p. 561.

New Method of Preparing Cocaine.—Prof. Bignon recommends the liquid hydrocarbons as solvents for cocaine. He proceeds as follows: Coca leaves are macerated about 48 hours in a solution of sodium carbonate (20°), then dried and placed in a percolator with benzin, and again allowed to stand 48 hours. All of the cocaine which has been isolated by the sodium carbonate will be dissolved by the benzin. The benzin solution is shaken with water acidulated with hydrochloric acid (1–10), thus forming cocaine hydrochlorate, which dissolves in the water. The coloring and resinous matter which has been dissolved by the benzin remains with the latter, the acid solution containing pure cocaine hydrochlorate.—*L'Union Pharmac.*, xxvi, p. 456.

FOOD FOR INFANTS AND BREAD FOR DIABETICS.

By Dr. H. Bœhnke-Reich.

In "Zeitschrift d. Allg. Oesterr. Apoth. Ver.," 1885, p. 406–408, the author directs attention to a biscuit and a bread, the manufacture of which has been undertaken by H. O. Opel, of Leipzig, under the supervision of a chemist, Dr. Geo. Kerner.

The *nutritive biscuit* is intended for infants after they have reached the age of about four months, but is also quite agreeable to adults, and particularly strengthening to nursing mothers. It is prepared from

the best wheat flour, which is mixed with sugar, malt-yeast, table salt, condensed milk and nutritive salts in such proportions that the finished product has the composition given below. The nutritive salts are prepared by a pharmaceutical chemist, and, according to an assay by B. Kohlmann, made for the pharmaceutical district society of Leipzig, contain in 100 parts 6·66 phosphorus, 65·50 oxygen, 5·17 hydrogen, 3·00 carbon, 10·00 calcium and 9·67 sodium.[1] The dough, properly made, is set aside in a warm place for about an hour and a half, is then placed in suitable moulds, and when sufficiently porous is baked at a dry heat of 200°C. After removal from the oven the cake is exposed to the air for 24 hours, and is afterwards slowly roasted at a temperature of 100°C.

The analysis by B. Kohlmann showed a composition in 100 parts of biscuit of moisture 9·76, aliments of respiration 74·94 (including sugar 5·86), plastic aliments (albumen, etc.) 8·56, fat 2·58, inorganic constituents 4·16 (including calcium phosphate 2·25).

Properly preserved, the biscuit remains good for a long time. It has been used by Dr. Fürst, of Leipzig; Prof. Demme, of Bern, and many other physicians, with good success. The average weight of this nutritive biscuit is not given; but it is stated that two biscuits a day are sufficient for an infant between 3 and 6 months old, and four or five biscuits for a child a year old. The biscuit is softened in good warm cow's milk, which if necessary is suitably diluted with water, or it may be taken with tea, chocolate or beef tea. Dr. Fürst states that babies over 6 months old usually like this biscuit well, digest it properly, and are not subject to glandular swellings, as is often the case if fed on ordinary pastry or farinaceous food.

The *bread for diabetics* is prepared from pure fresh gluten, with the smallest possible quantity of amylaceous additions. Its odor and taste are pleasant, neither insipid nor sickly, and it may be taken by the patients for a long time without becoming repulsive. Kept in an upright position, it remains palatable for more than three weeks. Kohlmann found its composition to be as follows: moisture 22·03, protein compounds 20·56, fat 21·78, carbohydrates 24·28, cellulose

[1] Assuming that organic sodium salts are not used, the analysis corresponds approximately to a mixture of about 50 parts of crystallized sodium carbonate, 10 sodium bicarbonate and 40 calcium phosphate, the latter prepared by precipitating calcium chloride with sodium phosphate; such a mixture contains P 7·2, O 64·4, H 4·8, C 3·5, Ca 9·3 and Na 10·8.—EDITOR.

6·95, mineral constituents (including table salt) 4·40. A similar bread made by P. Ossian, of Paris, contains a larger percentage of carbohydrates (29·71) and of gluten, the latter being partly replaced by fat in the new bread, which thereby becomes more agreeable for continued use, and retains its softness for a longer time.

THE SOLUBILITY OF BINIODIDE OF MERCURY IN FATTY BODIES AND SOME OTHER SOLVENTS.[1]

By C. Méhu.

Mixtures of fatty bodies with most chemical bodies are wanting in homogeneity, instable and of moderate quality. The water and alcohol usually employed to dissolve the chemical bodies with a view to their more thorough mixture with the fatty bodies volatilize more or less completely; hence the appearance of crystals, sometimes large ones, irregularly distributed through the fatty matter. Further, under the influence of water chemical reactions take place that modify profoundly the original composition of the mixture.

In such preparations I have frequently attempted to substitute solution by simple admixture, without the addition of any solvent, and more than once with entire success.[2] This note has for its object to call attention more particularly to the solubility of biniodide of mercury in oils, lard, vaselin and other solvents.

Oil of Sweet Almonds.—Oil of sweet almonds dissolves enough biniodide of mercury to satisfy most therapeutic requirements. The following experiments will give a correct indication of this solvent power:

If a mixture of 65 centigrams of amorphous biniodide of mercury and 50 grams of sweet almond oil be triturated in a porcelain capsule placed upon a steam-bath, complete solution will be effected at the end of about a quarter of an hour. This proportion of mercury—13 grams in 1,000 grams of oil—cannot be much exceeded, even with the aid of

[1] Paper read before the Sixth International Pharmaceutical Congress at Brussels. Communicated by the Author.

[2] In 1868 I pointed out the solubility of benzoate of iron and valerianate of zinc in fatty oils; I also dissolved ferric cinnamate in oils.

a more prolonged trituration. Upon being left to cool, the solution deposits rather rapidly about two-thirds of the biniodide it contained in distinctly formed yellow and red crystals.

Almond oil heated to about 180°C. dissolves about 80 grams of biniodide of mercury in 1,000 grams. Upon this solution cooling it deposits numerous sulphur-yellow crystals of mercury biniodide, the deposit being pretty considerable by the time the temperature has fallen to 150°C. Collected upon a filter these crystals pass rapidly into the red modification.

Almond oil containing, while hot, 8, 7, or 6 grams of the biniodide in 1,000 grams, deposits the greater part of its excess of biniodide before completely cooling.

I have preserved without deposit and for several days, at a temperature of 25°C., almond oil containing 5 grams of biniodide in 1,000 grams; but this oil deposited a notable quantity of biniodide when the temperature fell to about 18°C.

Almond oil containing not more than 4 grams of biniodide of mercury per 1,000 grams has remained fifty days in a cold cellar without depositing the least trace of biniodide. It may, therefore, be considered that this proportion—4 in 1,000—should not be exceeded in practice.

In these experiments, with the object of insuring perfect preservation of the product, I used almond oil that had been previously heated for some minutes to a temperature of 220° to 250°C., and filtered after becoming quite cool. This treatment of the oil is like that I adopted in obtaining the stable phosphorated oil which has now been included in the French Codex. But almond oil of good quality, well filtered and not previously superheated, gives very satisfactory results.

In order to charge almond oil with a larger quantity of mercuric compound recourse may be had to various other compounds. Potassium iodide, for example, increases the solubility of biniodide of mercury in almond oil. Upwards of 50 grams of the combination $(HgI_2)_2$, KI can be dissolved in 1,000 grams of the oil. For instance, 2 grams of biniodide of mercury and 73 centigrams of iodide of potassium having been dissolved in a steam-bath in 50 grams of almond oil, the solution after remaining six weeks in a cellar had only deposited some minute crystals of biniodide, due probably to the insufficient purity of the commercial iodide of potassium. I have raised the quantity of iadohydrargyrate of potassium beyond 75 grams per kilogram of oil,

without any sensible deposit taking place during cooling, or even after eight days.

Olive Oil.—At 100°C. olive oil behaves nearly like almond oil towards biniodide of mercury. It deposits slowly the excess of biniodide, and does not appear to retain more of it when cold.

Poppy Seed Oil.—At about 100°C. poppy seed oil dissolves notably more biniodide of mercury than almond oil. At that temperature I have dissolved 15·35 grams of biniodide of mercury in 1,000 grams of the oil. When cold, poppy seed oil retains in solution three times as much of the biniodide as almond oil. A solution of 10 grams of biniodide of mercury in 1,000 grams of poppy seed oil did not become turbid even after remaining ten days in the cellar. This experiment was made twice.

Nut Oil.—At about 100°C. nut oil dissolves 15 grams of biniodide of mercury in 1,000 grams. In the cold, nut oil retains in solution about 13 grams of the biniodide per kilogram.

Poppy seed oil and nut oil are both drying oils; they are distinguished from almond oil and olive oil by possessing a solvent power a little greater when hot, and nearly three times as great when cold.

Castor Oil.—Castor oil is one of the most powerful solvents of biniodide of mercury. By heating in a porcelain capsule, in a steam-bath, to about 100°C., and using a small glass pestle as a stirrer, it is possible to dissolve 1 gram of biniodide of mercury in 25 grams of castor oil, or 40 grams in 1,000 grams of oil. Upon being left to cool, the oil deposits only half the dissolved biniodide.

A solution of 1 gram of biniodide of mercury in 40 grams of castor oil still deposits slowly red crystals of the biniodide.

A solution of 1 gram of biniodide of mercury in 50 grams of castor oil does not become turbid in cooling, and even after standing a month at the ordinary temperature it remains absolutely clear. This solution contains, therefore, one-fiftieth of its weight of biniodide of mercury. It appears to me capable of satisfying all therapeutic requirements.

The combination of the biniodide with the bichloride of mercury dissolves readily in the oil. At the temperature of the vapor-bath it is easy to dissolve 80 grams of biniodide of mercury and 48 grams of bichloride of mercury in 1,000 grams of castor oil. Only a small proportion of the mixture separates during the cooling; the deposit contains a whitish crystalline combination of the two constituents. The castor oil retains, when cold, nearly 10 per cent. of a mixture of

equal equivalents of biniodide (eq.=227) and bichloride (eq.=135·5) of mercury, only traces separating in course of time of the slightly yellowish white crystalline compound already mentioned.

Iodide of potassium increases considerably the solubility of biniodide of mercury in castor oil. In a steam-bath, at a temperature near 100°C., I have dissolved easily 200 grams of the compound $(HgI)_2KI$ in 1,000 grams of castor oil. Iodohydrargyrate of potassium, which contains 73·1 per cent. of its weight of biniodide of mercury, dissolves, thererefore, in five times its weight of castor oil at a temperature near 100°. The solution kept for three weeks at a temperature of 20°C. gave only traces of a yellow crystalline compound. The solubility of the iodiohydrargyrate is, therefore, the same in hot and in cold castor oil.

Lard.—If lard be melted in a steam-bath in a porcelain dish, and 1·25 gram of biniodide of mercury be added per 100 grams of lard, the mixture being stirred with a glass pestle, all the biniodide can be dissolved. The solution is clear and colorless; but, upon being left to cool, it becomes rose-colored in solidifying and deposits biniodide of mercury, which can be seen to be distinctly crystalline under the microscope.

When this solution—12·5 grams of biniodide in 1,000 grams of lard—is diluted with its own weight of lard it still becomes rose-colored in solidifying, and deposits crystals of biniodide of mercury. But lard which contains not more than 4·5 grams of biniodide of mercury in 1,000 grams no longer deposits crystals of the biniodide in cooling.

Vaselin.—Vaselin dissolves little biniodide of mercury, even with the aid of heat. In a steam-bath, and using a small glass pestle to rub down the mercuric compound, the quantity dissolved is not sensibly in excess of 2 grams of biniodide in 1,000 grams of vaselin. The solution is limpid and colorless. Left to cool it becomes strongly rose-colored; it even deposits the biniodide upon the sides of the capsule before solidifying. Upon augmenting gradually the quantity of vaselin the solution of 1 part in 1,000 assumes a clear salmon tint in cooling, and deposits numerous crystals of biniodide. A solution of 1 in 1,500 when cool has a very marked orange-rose tint, and deposits very distinct crystals of biniodide. From a solution of 1 in 2,500 there still separate during the cooling perfectly distinct crystals in quantity sufficient to impart to the cold mixture a slight rose color.

Upon lowering the proportion of biniodide to 1 in 4,000, the cool liquid no longer deposits the least trace of biniodide.

Carbolic Acid.—Heated to about 100°C. carbolic acid dissolves a little more than 20 grams of biniodide of mercury in 1,000 grams. Left to cool the solution deposits more than half the biniodide it contained; the exact determination of the quantity is hardly practicable in consequence of the solid condition of the cold mixture.

Benzin.—One thousand grams of rectified commercial benzin dissolves 20 grams of biniodide of mercury at a temperature near 100°C. At the ordinary temperature benzin retains in solution only 4 grams of the biniodide in 1,000 grams.

Various Mercuric Compounds.—In England and the United States the oleate of mercury in solution in oils is frequently employed. It is obtained by triturating—preferably in the cold during twenty-four hours, or heating to a temperature exceeding 70°C.—a mixture of 10 parts of yellow oxide of mercury and 90 parts of purified oleic acid. Such a preparation keeps badly in proportion as it is weaker in mercury; it deposits metallic mercury as the oleic acid becomes transformed into oxyoleic acid. An oleate with 20 per cent. of oxide of mercury has also been recommended as keeping better, it being diluted with oleic acid or olive oil as required. The observations of Squibb,[1] Parsons[2] and Tichborne[3] have, however, demonstrated the great instability of these mixtures, which are in no way comparable to definite and stable officinal preparations, such as the solutions of biniodide of mercury in oils that I have here described.—*Phar. Jour. and Trans.*, Oct. 17, 1885, p. 327.

COCA LEAF CIGARS AND CIGARETTES.—Dr. Lewis Lewis, Philadelphia, has been using cigarettes composed in part of coca leaf and partly of tobacco, for about nine years, in the treatment of throat affections. Dr. F. E. Stewart ("Phil. Med. Times," Sept. 19, 1885,) has employed a cigar made of coca leaf with a wrapper of mild imported tobacco; also a cigarette of coca wrapped with rice paper, and a "smoking tobacco" made of coca without admixture of any kind, which may be smoked in a pipe. By the use of these preparations the peculiar effects of coca were obtained, though in a milder degree than after taking it internally.

[1] "Pharmaceutical Journal" [3], xiii, 530.
[2] *Ibid.* [3], xv, 656. [3] *Ibid.* [3], xv., 576

CONTRIBUTION TO THE CHEMISTRY OF RHUBARB ROOT.[1]

By M. Kubli.

Any one who may have occupied himself with the chemical investigation of the three vegetable drugs, rhubarb, senna leaves, and *Rhamnus Frangula* bark, will have made the observation that there is present in them a peculiar body containing nitrogen and sulphur, which especially accompanies the active constituents of these drugs with great persistency. In resuming some interrupted studies of rhubarb root in the laboratory of the hospital pharmacy at Dünaburg, the author sought first to ascertain what part this peculiar body played in these vegetable substances, and whether it might not be considered as belonging to the non-organized ferments, such as emulsin, myrosin, etc. The present paper is a preliminary contribution to the solution of this question.

After Schlossberger and Döpping had first recognized the presence of chrysophanic acid in rhubarb[2] the author demonstrated that the acid occurred in the form of a glucoside[3] that split upon being boiled with acids into chrysophanic acid and sugar, to which he gave the name "chrysophan." Dragendorff, subsequently, in analyzing five different commercial varieties of rhubarb,[4] confirmed the observation of the author that chrysophanic acid occurs ready formed only in very small quantities in the root. According to this analysis it was present in appreciable quantity (1·01 per cent.) only in *Rheum sibiricum*, whilst in the other four commercial varieties (*Rheum Moscoviticum*, *R. Chinense*, *R. palmatum tanguticum*, and *R. Anglicum cultum*) either none or only traces could be detected. The method used by Dragendorff for the estimation of the chrysophanic acid consisted in extracting powdered rhubarb with light petroleum spirit, the petroleum being colored intensely yellow when the rhubarb under examination contained free chrysophanic acid, whilst in the opposite case it remained colorless.

The correctness of this method of testing may be verified by boiling powdered rhubarb in which no chrysophanic acid can be detected by

[1] "Pharmaceutische Zeitschrift für Russland," xxiv, 193.
[2] "Liebig's Annalen," 1844, i, 215.
[3] "Pharm. Zeit. f. Russland," vi, 603.
[4] "Pharmaceutical Journal," [3], viii, 826.

means of petroleum spirit twice with 94 per cent. alcohol, and allowing the hot filtered liquor to evaporate spontaneously, when no chrysophanic acid, either in the crystalline or the amorphous condition will be found to separate. But if this experiment be varied, so that rhubarb powder, in which chrysophanic acid cannot be detected by the above method, be first macerated with water forty-eight hours, the residue filtered off and dried, and then shaken with petroleum spirit, the interesting observation will be made that the petroleum spirit immediately becomes intensely yellow. Further, if a rhubarb powder thus previously treated with water be boiled with alcohol, and the hot filtered extract allowed to evaporate spontaneously in a porcelain dish, a not inconsiderable quantity of chrysophanic acid will separate out, partially amorphous and part in a granular crystalline condition.

In illustration of this statement the following experiments may be quoted. They were made with two sorts of Chinese rhubarb which were supplied in 1878 and 1879 from the Crown warehouse in Warsaw to the hospitals of the Wilna military district (I and II), and with a crown rhubarb in powder, for which the author was indebted to Professor Trapp.

1. Estimation of moisture made between 100° and 105°C.

1·006 gram of No. I lost 0·073 gram = 7·26 per cent.
1·013 gram of No. II lost 0·077 gram = 7·70 per cent.
0·982 gram of No. III lost 0·079 gram = 8·04 per cent.

2. A gram of each kind was digested eight days with twelve grams of light petroleum spirit at the ordinary temperature, with agitation. In all these cases the supernatant liquid remained perfectly colorless, and upon evaporation not a trace of chrysophanic acid, but only a small quantity of a soft fatty mass, was left.

3. Each gram of rhubarb was placed with sixteen grams of 96° alcohol in a small retort provided with a return condenser, and maintained at the boiling temperature three minutes. The liquid was then filtered off, and the residual rhubarb heated to boiling with eight grams of fresh alcohol, the liquid again filtered off, and the united extracts left to evaporate spontaneously in a porcelain dish. In neither case was there a separation of a trace of chrysophanic acid.

4. One gram of No. I was macerated forty-eight hours with 20 cc. of distilled water, with agitation; after filtration the residue was worked upon the filter with 13 cc. of water, dried at about 30°C., and rubbed down in an agate mortar.

The powder thus obtained was then treated exactly as that in experiment 3; that is, boiled with alcohol and the extract allowed to evaporate at the ordinary temperature. Already, on the second day, a yellow granular precipitate had separated, partly upon the bottom and sides of the dish and partly as a yellow crystalline skin upon the surface of the liquid. On the third day, after the complete evaporation of the liquid, the yellowish residue in the dish was taken up with 10 grams of 40° spirit, filtered, the residue washed upon the filter with 6 grams of spirit of the same strength, but boiling, in order to remove impurities, such as phæoretin, erythroretin and fat, and then the remainder, together with the filter, dried at between 100° and 105°C. The weight of the colored matter amounted to 0·0196 gram, which calculated upon the dried substance represented 2·12 per cent. It was of a golden yellow color, presented a granular crystallization, and separated readily from the filter after drying. It behaved towards reagents and solvents exactly like chrysophanic acid. Nevertheless, it still contained traces of emodin, which could be demonstrated in the following way. The colored matter was treated, as recommended by Rochleder, with boiling soda solution, in which chrysophanic acid is insoluble, the solution decomposed with hydrochloric acid, and the separated flocks collected upon a filter, washed, taken up in a little hot 94° alcohol and the solution left to evaporate to about one-third of its volume on a watch-glass. Yellow flocks were then found to have separated, which brought under the microscope by means of a glass rod proved to consist of agglomerations of needles grouped in a stellate arrangement round a generally darker cellular-formed nucleus.

1·0236 gram of rhubarb No. II, treated in exactly the same way as in the previous experiment, No. 4, gave 0·098 gram of chrysophanic acid = 2·09 per cent. of coloring matter in the dried substance.

1·0174 gram of rhubarb No. III gave 0·0194 gram of chrysophanic acid = 2·07 per cent. in the dried substance. In the coloring matters prepared from Nos. II and III also distinct traces of emodin could be detected.

5. 1·0236 of rhubarb No. II, treated exactly as in experiment 4, only with the difference that instead of forty-eight hours it was macerated with water twenty-four hours, gave 0·021 gram of coloring matter = 2·21 per cent. in the dried substance.

It will be seen that this yield was somewhat larger than that from

the same kind of rhubarb root after forty-eight hours' maceration in water (experiment 4). But whilst the colored matter obtained in experiment 4 was, after drying, of a golden yellow color, showed a granular crystalline condition and separated readily from the filter, that obtained in this subsequent experiment had, after drying, a more dirty yellow color, adhered closely to the filter and the horny crystalline form was less pronounced.

In this case a small quantity of amorphous substance still clung to the coloring matter, due probably to the shorter duration of the maceration of the rhubarb powder with water.

6. 1·037 gram of rhubarb No. III was treated with water as in experiment 4, and then upon the dried residual rhubarb was poured 12 grams of light petroleum spirit, which upon being shaken was immediately colored intensely yellow. After eight days' maceration the liquid was filtered off, more petroleum spirit passed through the rhubarb on the filter and the filtrate evaporated. The residue, dried at between 100° and 105°C., amounted to 0·013 gram = 1·36 per cent. of dried substance; it consisted of chrysophanic acid and fat.

It will be seen that here the yield was considerably smaller than by the process followed in experiment 4, and this is explained by the fact that chrysophanic acid is only soluble to a small extent in light petroleum spirit, so that an eight days' maceration of the root with twelve times its weight of light petroleum spirit only partially exhausted it. When the residual rhubarb from this experiment was treated with a second quantity of petroleum spirit, the latter after a time acquired a strong yellow color. Light petroleum spirit would seem, therefore, to be better adapted for the qualitative than for the quantitative determination of chrysophanic acid in rhubarb.

The foregoing experiments make us acquainted with the interesting fact that chrysophanic acid is first formed in rhubarb root upon digestion of the latter with water; and that therefore little or none of this acid exists preformed in the more important kinds of rhubarb. The formation of chrysophanic acid is due without doubt to its splitting off from the mother substance, chrysophan, effected probably by a ferment-like body, which is soluble in water, but not soluble in alcohol; it is for this reason that an alcoholic extract of the root can be evaporated without decomposition, because while chrysophan will be contained in it the body causing the fermentation will not. In this way also it is explained sufficiently for present purposes how an

extract of rhubarb prepared with dilute spirit—for instance, tincture of rhubarb—will deposit from time to time a precipitate, which according to Clarke consists chiefly of chrysophanic acid. In such an extract there is, besides the chrysophan of the root, a part also of the body capable of acting upon it as a ferment. The breaking up of the glucoside is therefore only imperfectly and gradually effected.

In a watery extract of rhubarb—and consequently in all the official extracts prepared by macerating the root with water—it would appear from the foregoing experiments that only a little chrysophan can be expected, because under such conditions the glucoside undergoes decomposition. This agrees with the experience of the author in a previous investigation, when he obtained not more than 0·6 or 0·7 gram of chrysophan from 420 grams of "crown" or good Chinese rhubarb. On the other hand, all the separated chrysophanic acid will be found after the maceration in the residual marc; the residue after the preparation of extractum rhei could therefore be profitably used as a source of pure chrysophanic acid, as the article appearing in commerce is not generally pure. For this purpose the dried and powdered marc should be heated to boiling with three times its weight of alcohol of at least 90° Tr., in a retort provided with a return condenser, the temperature maintained five minutes, the liquor filtered, the residue boiled a second time with one-and-a-half times its weight of alcohol, again filtered, and the united filtrates allowed to stand twenty-four hours in the cold in a stoppered vessel. A large portion of the chrysophanic acid will separate in a granular crystalline condition. If the supernatant liquid be decanted, the alcohol distilled off and the residue treated with dilute alcohol (40° to 50° Tr.), in which chrysophanic acid is insoluble, a further quantity of coloring matter may be obtained.

According to recent observations, chrysophanic acid possesses strongly antiseptic properties, to which rhubarb doubtless owes its beneficial action in catarrh of the stomach, indigestion, etc. These properties belong to chrysophan also, but to a more intense degree; because it may be expected that when it reaches the stomach chrysophanic acid is at once split off and is thus brought into action in a nascent condition. It would seem therefore desirable that in the official preparations this substance pertaining to the active constituents of rhubarb root should be present in its integrity. As has been shown, in many preparations of rhubarb little or no chrysophan is to

be expected, because the existing formulæ do not take into account the chemical properties of this compound. In a future communication, which will deal, among other things, with the purgative principle of rhubarb, the author proposes to submit some formulæ for such preparations.—*Phar. Jour. and Trans.*, July 18, 1885, p. 65.

REPORT ON PRESSED ERGOT.[1]

By John Moss, F.I.C., F.C.S.

On Wednesday, August 14, 1878, a "Note on an Improved Preparation of Ergot" was read by Mr. A. W. Postans, F.C.S., at a meeting of the British Pharmaceutical Conference, held in Dublin. (See "Amer. Jour. Phar.," 1878, p. 581.) In the discussion which followed, Mr. T. B. Groves, of Weymouth, a pharmacist of wide experience and fertile in expedient, suggested that ergot itself might keep better if it were first ground and then compressed. The suggestion struck me as being a very valuable one, for strong hydraulic pressure would remove a considerable portion of the fixed oil, which I believe has an attraction for the insects which prey upon ergot, and the solid compressed form would offer so much less extent of surface than the ordinary drug that it might reasonably be expected to be less affected by atmospheric influences. The experiment was accordingly tried in February, 1879, on 7 lbs. of ordinary commercial ergot, which was ground and then subjected in three separate lots to a pressure of 2¼ tons to the square inch. Fourteen ounces of fixed oil (12·5 per cent,) were obtained, and three cakes, each about 8 inches square. Mr. Groves took charge of half of one of these cakes, and Mr. Holmes placed the other half in the Museum at Bloomsbury Square. Mr. Groves placed his specimen in a storeroom, where, as he informs me in a letter dated July 17, 1885, it lay on a shelf "without any special care being given to it. To-day it looks as good as ever; I send you a bit to see. But the question is, how about its potency; does it retain its medicinal activity?" This was the crucial question, and to decide it I obtained from Mr. Groves more of the cake and made a fluid extract, proceeding as the British Pharmacopœia directs, except that the ether treatment was omitted. There is a specimen of the cake on the table. In color it strongly resembles linseed cake, but the grain is

[1] Read before the British Pharmaceutical Conference.

much finer. It has the characteristic smell of ergot, and certainly seems no worse for age. Another specimen of the cake, kindly sent me by Mr. Holmes from the Museum, had when received a stronger smell and appeared to be not quite so dry. It had been kept in a bottle and evidently sweated there. Neither specimen showed signs of insect life, but of the two modes of keeping, to let it lie in paper seems the best. The cake readily breaks down with hot water and absorbs three or four times its own weight. It is convenient also for disintegration by a grater, should it be desired to administer the powder.

Oil in Pressed Ergot.—It may be convenient to mention here that in order to reply to questions which were put when the pressed cake was first exhibited at Bloomsbury Square in 1879, the oil was extracted by ether from 100 grains of it reduced to powder, and when dried was found to weigh 13·7 grains; this with the 12·5 grains removed by pressure makes 26·2 per cent, and what was absorbed by the pressing cloths will make up the oil to the normal quantity present in ergot, about 30 per cent. By operating with special appliances, such as are used by oil pressers, more oil could be removed from the cake than my experiments show, and, working on a larger scale, the proportion absorbed by the cloths would be smaller.

Liquid Extract.—In order that the liquid extract from pressed ergot might compare on all fours with the ordinary preparation, the increased richness of the cake, as compared with ergot, from removal of inert oil by pressure and loss of moisture by long exposure in a dry warehouse, must be taken into account. No actual observation of the original weight of the cake would appear to have been made, but an estimated loss of 6 per cent. for moisture, *plus* 16 per cent. of oil ascertained, will not unduly favor the cake. Working on this basis, half a pound of pressed ergot was used to make 10¼ fluidounces of liquid extract. A specimen of this is on the table, and on examination it will be perceived that it has the characteristic odor and taste of ergot in a greatly modified degree. It is also paler and has not the body of the extract as ordinarily prepared. This is no doubt due in part to extractive being carried away in the oil during pressing, and possibly also partly due to long exposure having rendered some extractive insoluble. Be that as it may, it may in a measure account for the preference which patients give it over ordinary extract as intimated below.

Potency.—The liquid extract was placed in the hands of my friend,

Mr. M. G. Biggs, M.R.C.S., of Wandsworth, the nature of whose practice affords him abundant opportunity for watching the effects of ergot. I append the result of his trials in his own words:

"*Report on Action of Liquid Extract of Ergot.*

"The liquid extract of ergot supplied by Mr. Moss was used in three cases of confinement. All had had children previously; in the first case, after the birth of the child and detachment of the placenta there was a tendency to flooding owing to inertia of the uterus; in about fifteen or twenty minutes pains came on, the uterus contracted, and hæmorrhage ceased, the contraction remaining permanent; there were no after pains, although after each previous delivery these had been very bad. This I have sometimes found before as a result of administering ergot, and therefore regard it as an extra proof of perfect action. The other two cases were simply suffering from inertia, pains were weak and threatened cessation; in each case the liquid extract was used, and with apparently the usual results. Neither of these cases was, however, to be relied on fully, as pains might have come on naturally. The last case in which I used it, however, was an almost perfect physiological experiment.

"It was a case of miscarriage at the third month. When I arrived the patient had lost a large amount of blood, and was having labor pains rather severely; the ovum, however, was projecting slightly from a partially dilated os, the vagina was plugged, and the hæmorrhage and pain ceased. The next evening on removing the plug things were *in statu quo*. I gave a dose of the liqnid extract (one drachm) and plugged again. Shortly after pains again came on, but did not last long. The next day two other doses were given of the same strength, and each time pains came on and lasted some time, and on removing the second plug the os, which had before been partly opened, was now firmly closed. The case is still proceeding, but there could be no clearer proof of the action of the liquid extract than the cessation of pains altogether, unless shortly after a dose of ergot, and the recurrence of these phenomena after each separate dose.

"Mr. Webb, my assistant, has also used the liquid extract, and he is convinced that it is perfectly active, and says the patients prefer it to other kinds; in his estimation it is an elegant preparation."

From these observations it appears conclusive that pressed ergot retains full potency after six and a half years, and that no special care is necessary to preserve it from insect attacks or from climatic influences which are adverse to the ordinary drug.

I beg to express my thanks to Mr. Biggs for the prompt and effective assistance which has given point to this short report.—*Phar. Jour. Trans.*, Sept. 26, 1885, p. 274.

QUININE LACTATE, dissolved in four parts of water, is recommended by Vigier for hypodermic use. The salt is rich in alkaloid, has a neutral reaction, and its injection does not produce pain or inflammation.—*Gaz. Hebdom.*

ON THE EXTRACTION OF THE ALKALOIDS FROM CINCHONA BARK BY DILUTE ACIDS.

By Dr. J. E. De Vrij, C.I.E.

Reprint from the "Chemist and Druggist," August 15, 1885, *communicated by the Author.*

Many years' experience has taught me that *all* the alkaloids contained in cinchona bark can be completely extracted by treating the bark in fine powder with hydrochloric, nitric, or phosphoric acid, but that extraction cannot be completely effected by sulphuric acid. This has been disputed by some chemists, and by no one more strongly than by Dr. B. Paul, who stated at the evening meeting of the Pharmaceutical Society, held on December 3, 1884, as the result of recent investigations on various succirubra barks, that they retained nearly 50 per cent. of their alkaloids after extraction by hydrochloric acid.[1] But since, as I showed some years ago,[2] 40 per cent. of the alkaloids present in cinchona bark may be extracted by cold water alone, Dr. Paul's statement will appear on the face of it extremely improbable. I have, nevertheless, been induced to make a new and accurate investigation of this matter, thus late in my career, by the fact that other chemists have also obtained unsatisfactory results in attempting to extract the alkaloids of cinchona bark by dilute hydrochloric acid.

When I published, some years ago,[3] my process for the preparation of ext. cinchonæ liq., in which two molecules of HCl are used for each molecule of total alkaloids, I pointed out that a material quantity of alkaloid, amounting to about 20 per cent. of the whole was left behind in the bark. It follows, therefore, that if—as I hope to show—the extraction of the whole of the alkaloids by dilute HCl is possible, more than two molecules of the acid must be used. The explanation of this is that the alkaloids do not exist in the bark in the *free* state, but in combination with quinic, quinovic, and more largely with cinchotannic acid. When also it is remembered that the amount of the latter (cinchotannic acid) is often very considerable, reaching, as I have recently observed in a bark of cinchona officinalis, to more than 12 per cent., as against 6·72 per cent. of alkaloids, and when we

[1] "Pharmaceutical Journal," December 6, 1884.

[2] "Haaxman's Tydschrift der Pharmacie," 1879, p. 258.

[3] "Haaxman's Tydschrift der Pharmacie," 1880, p. 5.

consider the influence of *quantity* in chemical reactions (l'influence des masses), as propounded by Berthollet in his "Statique Chimique," the necessity for a preponderating quantity of acid will require no further demonstration.

A series of observations on bark of C. officinalis and succirubra showed that four molecules of HCl ($4\times36{\cdot}5$) sufficed for one molecule of total alkaloids, of which the molecular weight may be taken to be 310. Supposing, therefore, that the total alkaloids of the bark to be operated upon do not exceed 10 per cent., 17 grammes of strong HCl, containing 30 per cent. of real HCl, will be sufficient for the complete extraction of 100 grammes of finely-powdered bark. More acid must be used in those rare cases in which the alkaloids exceed 10 per cent.

The method of applying the quantity of acid thus determined is also important to the success of the operation. The acid should be mixed with a portion of water equal to the quantity of bark, and the bark should then be added so as to form a thick paste, which is to be left for some hours. More water is then stirred in until the whole is sufficiently fluid to pour freely. Much foam is formed at this stage, and it is necessary to postpone the next operation until the foam has entirely disappeared. Percolation is then effected in a cylindrical glass tube with constricted exit, which is closed by a loose plug of "charpie."[1] As soon as the percolate begins to run clear it is collected, percolation being kept up by pouring on distilled water until excess of caustic soda ceases to produce a precipitate in the passing percolate.

I must now allude to two matters, one of which has been publicly advanced as an objection to the above process, whilst the other has been communicated to me privately.

1. It has been objected that after the percolate, as above, has ceased to be acted upon by caustic soda, the addition of the well-known reagent iodide of mercury and potassium shows a distinct alkaloidal reaction, and percolation must be carried much farther before this reaction ceases. Although not myself attaching importance to this objection, I have thought it right to ascertain by actual experiment

[1] "Charpie" is the French name for threads of old linen. Upon this apparently insignificant agent the success of the operation largely depends, whether it shall be completed in a few hours, or whether it may be prolonged for days.

how far it affects the accuracy of the process. Twenty grammes of succirubra bark were therefore treated in the manner described, until 180 cc. of percolate had been recovered, when caustic soda ceased to produce precipitation. The percolation was then resumed until further 950 cc. had been recovered, and the reaction with HgI,KaI had also ceased. To this second portion (950 cc.) a sufficient quantity of the mercuric reagent was added, and the liquor was allowed to settle for some days, when the clear supernatant was decanted, and the precipitate was carefully collected on a filter. It was found that while the first portion of the percolate, 180 cc., yielded 1·42 gramme of alkaloids, the second portion yielded only 0·031 gramme of the compound of alkaloids with iodide of mercury, corresponding to less than 0·015 gramme alkaloids. This inaccuracy, amounting to no more than 1 per cent. of the alkaloid present in the bark, is so small that it may, I think, be disregarded.

2. It has been remarked that the percolate, after running clear for a considerable quantity, presently becomes turbid. I have also sometimes met with this inconvenience, which I attributed some years ago to the behavior of cinchotannic acid under certain conditions. In analyzing 20 grammes of a sample of C. officinalis, which proved to be very rich in cinchotannic acid, I observed that after 97 cc. of perfectly clear percolate had been recovered, the succeeding drops caused a slight turbidity in the previously clear liquor. The percolate was therefore separated at this point into two portions. While remaining apart both were perfectly clear, but when mixed together a very turbid mixture resulted. The explanation is simple. Cinchotannic acid is freely soluble in water, but scarcely soluble at all in acids. The earlier percolate, containing much hydrochloric acid, dissolved but little cinchotannic acid; the later percolate, being almost free from acid, dissolved much cinchotannic acid, which was again thrown out of solution when brought into contact with the previously collected acid percolate.[1]

Although the whole of the alkaloids may be extracted from cinchona bark either by hydrochloric, phosphoric, or nitric acids, used

[1] The above observations may be further verified thus: Let 1 part *Indian* cinchona bark of any species be percolated with 4 parts water. To the clear percolate add excess of HCl, and an abundant precipitate of cinchotannic acid will be produced. *American* calisaya bark, on the contrary, shows no such reaction, in consequence of its small amount of cinchotannic acid.

in proportions equivalent to those quoted above, a slight difference will be observed in the results obtained when nitric acid is employed, the amount of alkaloid being less by a few centigrammes than that obtained by hydrochloric acid. The latter acid dissolves a colored substance contained in cinchona bark, which is not alkaloid, but which behaves towards hydrochloric acid as if it were so. This substance is not soluble in nitric acid. If, therefore, the total alkaloids extracted by hydrochloric acid are afterwards treated with dilute nitric acid, the whole of the *alkaloids* will be redissolved, leaving a very small quantity of brownish matter unacted upon. I believe the behaviour of this brown residue to be one of the causes of discrepancy in analyses of bark performed by different methods.

To show that cinchona bark cannot be completely exhausted of its alkaloids by dilute sulphuric acid, 20 grammes of powdered bark (ascertained to contain 6·72 per cent. of total alkaloids by the hydrochloric-acid process above described) were treated with an equivalent quantity of sulphuric acid employed in the same manner. The first percolate (100 cc.) was of a much paler color than that obtained by hydrochloric acid; it was rendered only slightly turbid by caustic soda, or by HgI,KaI, and was only slightly reddened by the former. The percolation was continued until 677 cc. had been recovered. This large volume (more than thirty-three times the weight of the bark) yielded only 0·807 gramme, or 4·035 per cent. of alkaloid. Percolation was therefore resumed until a further 800 cc. were recovered, which yielded 0·063 gramme alkaloids. The total results from 1,477 cc. percolate (more than 70 volumes) was therefore only 0·807+0·063 = 0·87 gramme, or 4·35 per cent., from a bark known to contain 6·72 per cent. From this it must be concluded that sulphuric acid is practically incapable of extracting the whole of the alkaloids of cinchona bark.

Before proceeding to speak of the practical application of the above process, I may explain why I have always insisted upon the use of *cold* dilute acids in operating upon cinchona bark.

If bark powder, which has been completely exhausted of its alkaloids by cold hydrochloric acid, be heated to ebullition with more dilute HCl, and the liquid after being strained be accurately saturated by caustic soda, a voluminous red precipitate is formed resembling the so-called pectic substances described by Fremy, but containing not a trace of alkaloid. The intrusion of this matter makes the extraction

of the alkaloids at a high temperature much more difficult, and is unattended with any advantages.

I have been thus minute in discussing the treatment of cinchona bark by dilute acids for two reasons, viz:

1. Because the extraction of the alkaloids from bark by hydrochloric acid has been extensively practiced in Bengal since 1872 in the manufacture of the well-known cinchona febrifuge (sometimes called "Indian quinine"), and the process, which was adopted on my recommendation to the Secretary of State for India, has been condemned as *wasteful* by the editor of the "Pharmaceutical Journal."[1]

2. Because, as an old pharmacist, I wish all pharmacists to examine for themselves the quality of the cinchona bark that they use, and I consider the hydrochloric-acid process by far the most suitable for pharmaceutical uses. It is simple, inexpensive, thoroughly reliable, and practically (if not scientifically) accurate. It is also capable of indicating not only the percentage of alkaloids, but also the proportion of cinchotannic acid, which is of no small importance from a therapeutical point of view.

The following directions will enable pharmacists to obtain satisfactory results with facility:

Mode of Analyzing Cinchona Bark by Hydrochloric Acid.

Twenty grammes of finely-powdered bark are treated with hydrochloric acid and water as above described, whereby *all* the alkaloids are dissolved. The quantity of percolate which it is necessary to pass through the marc is usually from 180 cc. to 200 cc., which quantity will rarely be exceeded if the percolation has been successfully conducted. The estimation of the amount of alkaloids in this acid solution may be made in either of the following ways, viz:

1. The acid solution is precipitated by a *large excess* of caustic soda, which throws down a curd-like *white* precipitate. The precipitate is collected on a double filter,[2] and washed until the filtrate is nearly colorless. The whole of the filtrate is measured, and compensation made by adding to the weight of alkaloid, to be presently ascertained, 0·0585 gramme for every 100 cc. of the mother-liquor at temperature 15°C. The drained filter is carefully dried upon blotting-paper until the precipitate ceases to adhere, when it may be easily detached

[1] "Pharmaceutical Journal," September 13, 1884, p. 205.

[2] Doubling the filter facilitates the filtration.

without loss, and transferred to a small tared dish. It is now dried over a water-bath until it ceases to lose weight, and the weight is ascertained. Add the compensation above indicated for mother-liquor, multiply the sum by five, and the product is the percentage of alkaloids in the bark under examination.

The alkaline mother-liquor may now be used for ascertaining indirectly the percentage of cinchotannic acid. After exposure for two or three days in a shallow dish, by which the cinchotannic acid becomes converted into cinchona red,[1] the liquid is heated, and hydrochloric acid cautiously added to slight acid reaction. After cooling, the now turbid liquor is filtered through a double filter to collect the very voluminous precipitate of cinchona red. The precipitate is washed, dried, and weighed, the second filter being used as a tare.[2] By multiplying the ascertained weight of cinchona red by 1·2, a close approximation to the weight of cinchotannic acid is obtained, from which its percentage may be calculated, and it will be seen that the quantity of cinchotannic acid in different species of cinchona, and even in different samples of the same species, varies considerably.

2. The acid solution is mixed with excess of caustic soda as before, and well shaken in a bottle with 1 litre of commercial benzol, and left standing for not more than five minutes, for the benzol, which now contains the alkaloids in solution, to separate.[3] The benzol solution is now decanted on a filter previously moistened with benzol, and the remainder is poured into a separating funnel. After sufficient time for separation, the red alkaline liquor is drawn off into the bottle previously used, and shaken with other 200 cc. benzol to remove possible traces of alkaloid, and this benzolic solution is also filtered and added to the former. The amount of alkaloids contained in the

[1] If the dark-red alkaline liquor becomes turbid during exposure to air the quantity of caustic soda is insufficient for solution of the newly formed cinchona red, and more soda must be added.

[2] Although I am opposed to drying precipitates upon the filter, it is unavoidable in this case, because the moist cinchona red cannot be conveniently removed.

[3] A litre of benzol (boiling at from 85° to 120°C.) dissolves all the alkaloids of 20 grammes bark. By long standing, however, a slight separation of crystallized benzolate of alkaloid, chiefly cinchonine, may sometimes take place and affect the accuracy of the result. I, therefore, recommend that it should not be allowed to stand for more than 5 minutes. The benzol may be used repeatedly, without redistillation, and with but little loss.

mixed benzolic solutions may now be determined either directly or indirectly in the manner following, viz.:

Direct Determination.

The benzolic solution is shaken with 30 cc. very dilute nitric acid, the acid solution is drawn off and replaced by 20 cc. water, which is again shaken and added to the first. The liquors are heated to drive off traces of benzol, and when cool transferred to a separator and shaken with 200 cc. ether, and an excess of caustic soda. In this way *all* the alkaloids are dissolved by the ether,[1] leaving generally a slight brown film on the surface of the alkaline liquor, *which is almost entirely soluble in chloroform.*[2] After separating the ethereal solution a further 100 cc. ether is shaken with the alkaline liquor, and is then added to the first. By distillation of the ether, the whole of the alkaloids are left in a state of greater purity than I have ever obtained them by any other process.

Indirect Determination.

The benzolic solution is well shaken with 70 cc. deci-normal sulphuric acid. The acid solution is drawn off and replaced by 30 cc. water, which is again shaken and added to the other. The aqueous liquors are heated, and *accurately* neutralized by deci-normal solution of caustic soda until the color of reddened litmus is affected by it. The quantity of soda solution required for saturation is now to be deducted from 70 cc. (the equivalent of 70 cc. deci-normal sulphuric acid), and the difference multiplied by ·031[3] is the weight of alkaloid

[1] Whilst preparing this paper I found that the succirubra bark used in Bengal for the manufacture of cinchona febrifuge proved an exception to this rule; for, although the whole of the alkaloids are at first dissolved by the ether, a separation of small crystals of cinchonine quickly followed to the extent of 0·17 gramme. I attribute this to the large proportion of cinchonine contained in this bark, which I have found to amount to as much as 49·3 per cent. of the total alkaloids.

[2] This brown substance, *which is not alkaloid*, is the reason why analyses of bark, in which chloroform is the solvent, yield an apparent higher percentage of alkaloids.

[3] 0·031 gramme is the weight of alkaloid corresponding to 1 cc. of a deci-normal solution. The molecular weight of the mixed alkaloids of cinchona bark being, as previously stated, 310.

in 20 grammes bark. This product multiplied by 5 gives the percentage.

Example.—Suppose the bark for analysis to contain 5 per cent. alkaloid—which would be a reasonable standard for pharmaceutical purposes—the acid solution from 20 grammes powder should be neutralized by, say, 37·5 cc. soda solution:

For $$70-37{\cdot}5\times{\cdot}031\times5=5{\cdot}04$$

(the number of grammes of alkaloid in 100 grammes bark).

I consider this indirect determination the most simple for those who are accustomed to work volumetric processes.

In concluding this paper it is satisfactory to me to be able to state that another chemist, very experienced in the analysis of cinchona bark, confirms the practicability of extracting the whole of the alkaloids by hydrochloric acid as effectually as by any other process. Mr. A. Kissel, chemical assistant to Dr. G. Kerner, in Zimmer's quinine manufactory, has kindly sent me the following results of analyses performed by him on the same bark powder by the several processes indicated, viz.:

	Lime and alcohol Process.	Lime and Oil Process.	Hydrochloric Acid Process.
Quinine	1·805	1·798	1·802
Quinidine	0·358	0·347	0·351
Cinchonidine	0·338	0·343	0·335
Amorphous	1·873	1·867	1·874
Total	4·374	4·355	4·362

I therefore consider that the extraction of alkaloids from cinchona bark by hydrochloric acid, as applied to the manufacture of the cinchona febrifuge in Bengal, provided it is properly performed, is not a wasteful, but, on the contrary, an economic and efficient process. It is, moreover (with the exception of an unpublished process, the private property of my friend, Dr. G. Kerner, which I am not at liberty to make known), the only process that can be profitably applied *in the tropics* to the manufacture of the total cinchona alkaloids.

VARIETIES.

STROPHANTIN was isolated by Hardy and Gallois, from the seeds of a species of Strophantus, an apocynaceous woody climber, used in preparing the arrow-poison *iné*. The principle forms colorless neutral crystals, is soluble in alcohol and water, and was ascertained to be a heart poison. Experiments made with it in Edinburgh, show it to be physiologically allied to digitalin; it has been used hypodermically in doses of $\frac{1}{120}$ to $\frac{1}{60}$ grain.

ESTIMATION OF QUININE IN MIXTURES OF QUININE-ALKALOIDS. By Y. Shimoyama.—The method described is founded on the relative solubilities of the oxalates of the quinine alkaloids: Quinine oxalate dissolves in 1,446 parts of water at 18°; cinchonidine oxalate in 228 parts at 15°; quinidine oxalate in 151 parts at 15°, and cinchonine oxalate in 104 parts at 10°. The precipitation is effected by adding sodium oxalate to a dilute neutral solution of the alkaloids, and correction must be made for the amount of quinine oxalate remaining in solution.—*Jour. Chem. Soc.*, Aug., 1885, p. 935; *Arch. Pharm.* [3], [23], 209–229.

MINUTES OF THE PHARMACEUTICAL MEETING.

PHILADELPHIA, November 17, 1885.

On motion of Prof. Trimble, Mr. Wm. B. Thompson was called to the chair.

The minutes of the last meeting were read, and, there being no objection, they stand approved.

The Report of the Smithsonian Institution for 1883 was presented to the meeting, it having been received in the recess of the summer season, and not brought to the notice of the last meeting; it was accepted with thanks.

The Actuary read a paper upon *pill excipients*, and reactions which had been noticed in certain chemicals frequently prescribed in pillular form. The reading of the paper gave rise to an interesting discussion, in which Prof. Maisch, Mr. Lowe, Prof. Trimble, Mr. Thompson and the writer took part.

Mr. Thompson stated that a valuable lesson was to be drawn from the paper and the discussion, which was that pills should not be made with any excipient which merely suited the convenience of the dispenser, or served the purpose of causing the material to cohere into a mass that could be readily dispensed, but that each and every case must be decided by enlightened, thoughtful judgment; further, that it was a consideration what became of the immense quantities of wholesale-made goods that were annually disposed of in commerce.

Prof. Maisch stated that many years ago he had tried to find a suitable excipient for calomel pills, to be kept in stock, and his experience was then that it was best to make enough pills only for a few days' supply.

The use of extract of gentian was also discussed in its connection with the preparation of pills, and its promiscuous use objected to, both for chemical and therapeutical reasons. The paper was referred to the Publication Committee.

Prof. Maisch read a paper upon an indigenous *species of croton* received from Georgia, and showed under the microscope the stellate glandular scales from the leaves, branches, and from the silver-white flowers. The paper was referred to the Publication Committee, and the specimen donated to the cabinet.

A cabinet of botanical materia medica specimens, designed for the use of pharmaceutical students, was exhibited; it is put up by Parke Davis & Co., of Detroit, and contains 288 different drugs, packed in turned wooden boxes. Each box is numbered, and the catalogue accompanying the set gives the appropriate name, with its corresponding number.

Prof. Maisch stated that he was glad that such a cabinet, at a moderate price, was now accessible to students, many of whom had little opportunity in the stores of their employers of seeing all or most officinal drugs in their natural condition. In reply to a criticism that the odor of the wooden boxes in which the specimens are packed gave an odor to some of the drugs that is unnatural to them, Prof. M. stated that this taught the lesson to refrain from judging exclusively or mainly by the odor or taste, and to rely more upon the internal structure and characteristic growth.

There being no further business, the meeting adjourned.

THOS. S. WIEGAND, *Registrar.*

PHARMACEUTICAL COLLEGES AND ASSOCIATIONS.

ALUMNI ASSOCIATION, PHILADELPHIA COLLEGE OF PHARMACY.—At the first social meeting, held Oct. 13th, Prof. Risley delivered a lecture on hyoscyamus, belladonna, and allied mydriatics, including also the alkaloids atropine, duboisine, hyoscyamine, homatropine, cocaine and others.

At the second social meeting, held Nov. 10th, Prof. Woodbury gave a lecture on the relations existing between practical medicine and pharmacy, and the debt which medical science owes to pharmacy.

WESTERN ALUMNI OF THE PHILADELPHIA COLLEGE OF PHARMACY.—In response to a generally expressed desire of the many graduates of the Philadelphia College of Pharmacy residing in the Western and Middle States, an informal meeting was held November 22d, in Chicago, to discuss the formation of a Western Alumni Association. There were present Albert E. Ebert, Henry C. C. Maisch, Edward A. Mannheimer, Carl S. Haliberg, Andrew J. H. McGuire, Chas. L. Feldkamp, and others, all residents of Chicago. It was stated that there were nearly fifty graduates of the College in Chicago and its immediate vicinity alone, while in the surrounding States the number would reach in the hundreds. It was the sense of the meeting that an organization through which an annual reunion could be held in Chicago about Commencement time (commencing next year, 1886), would be very desirable, and would keep alive the pleasant recollections of the Alma Mater with the older graduates, besides being of interest and profit to those who come westward after leaving the College.

It is not intended that this Association shall encroach in any manner upon the regular Alumni Association of the College, but simply to give all its graduates residing west of the Alleghanies, whether members of the Philadelphia Alumni Association or not, an opportunity of meeting socially once a year. To all graduates residing in the States of Ohio, Michigan, Indiana, Illinois, Kentucky, Missouri, Kansas, Nebraska, Iowa and Wisconsin a cordial invitation is extended to participate.

Another meeting will be held in Chicago shortly to make preliminary arrangements, and the Secretary will give any information to those desiring to join. Let there be a generous response.

CHARLES L. FELDKAMP, *Secretary.*

56 *Beethoven Place, Chicago*, Nov. 23, 1885.

THE CALIFORNIA PHARMACEUTICAL SOCIETY held its annual meeting in San Francisco, Nov. 12th. The Society has 144 active, five life and one honorary member. The receipts during the past year amounted to $2,371.80; the disbursements were $2,270.78; leaving a balance of $101.02 in the treasury. A number of new members were elected. The Executive Officers for the ensuing year are: President, M. M. Searby; Vice-Presidents, Prof. H. Behr and Prof. Fred. Grazer; Corresponding and Financial Secretary, Chas. Troppmann; Treasurer, E. A. Schreck; Librarian and Curator, Dr. A. L. Scholl; Editor, Prof. W. T. Wenzell.

The Secretary is desirous to open correspondence with all pharmaceutical Societies in the United States for the interchange of opinions.

THE ILLINOIS PHARMACEUTICAL ASSOCIATION held its sixth annual meeting in Chicago, commencing Sept. 22d. Besides the address of the President and the reports of officers, reports on trade interests, on the pharmacy law, on drug adulterations, on non-officinal remedies, and on kindred subjects were received and fully discussed. Mr. T. H. Patterson, Chicago, was elected President for the ensuing year; Mr. T. N. Jamieson, Chicago, Secretary, and Mr. B. F. Gardner, Treasurer. The Association adjourned to meet in Rockford on the first Tuesday in June, 1886.

REVIEWS AND BIBLIOGRAPHICAL NOTICES.

A Textbook of Pharmacology, Therapeutics and Materia Medica. By T. Lauder Brunton, M.D., D.Sc., etc. Adapted to the United States Pharmacopœia by Francis H. Williams, M.D., Boston, Mass. Philadelphia: Lea Brothers & Co., 1885. 8vo, pp. 1035. Price, cloth $5.50, leather $6.50.

After a brief introduction, explanatory of the various subdivisions of the science of materia medica, the opening section treats of general pathology and therapeutics, explaining in a general way the manner in which drugs act upon different animals, the various organs and the secretions, the modifications in the effects under various conditions, the methods of administration, and the antidotes. The discussion of these subjects is particularly

adapted for the use of medical students, and while the details are comparatively brief, everything that seems to be of importance is treated with clearness, and when necessary explained by means of illustrations. The second section on Pharmacy gives brief explanations of the different groups of galenical preparations and lists of those recognized by the British and U. S. Pharmacopœias, with their doses. The following four sections, about 500 pages, treat of the medicinal agents, beginning with the elements and their inorganic compounds, which are followed by the organic compounds, excluding the active principles, these being considered in connection with the drugs from which they are derived. The vegetable and animal drugs are arranged in the natural orders of the plants and animals yielding them. For each drug the officinal name or names of the two pharmacopœias are given, explanations of the parts used, the habitat of the plant, brief characteristics of the drug, the officinal preparations with their doses, and an enumeration of the constituents. The physiological action, therapeutical uses, modes of administration, combination with other drugs, doses, antidotes and similar subjects of importance to physicians are discussed more in detail, in accordance with the scope of the work, which is intended as a textbook for the medical student, and to serve also as a book of reference in a condensed form. A limited number of the more important non-pharmacopœial drugs, like coto, quebracho, condurango, cheken, papayotin and others are considered in a similar manner. Besides the general index referring to the drugs and their effects, an index of diseases and remedies has been added, and a bibliographical index, which refers to the more important works and essays on the action and uses of the different remedies.

The work is doubtless a useful one. It contains nearly 200 illustrations, and that the general make-up is unexceptionable need merely be mentioned.

A complete pronouncing Medical Dictionary: embracing the terminology of medicine and the kindred sciences, with their signification, etymology and pronunciation. With an appendix comprising an explanation of the Latin terms and phrases occurring in medicine, anatomy, pharmacy, etc.; together with the necessary directions for writing Latin prescriptions, etc., etc. By Joseph Thomas, M.D., LL.D., etc. On the basis of Thomas's comprehensive pronouncing medical dictionary. Philadelphia: J. B. Lippincott Company, 1885. 8vo, pp. 844.

A work from the pen of the distinguished author, based upon a previous one, which has been received with merited commendation, may be expected to present characteristics which entitle it to special attention. In the first place should be mentioned its extent; scarcely a technical term or a scientific name used in medicine, pharmacy, and in medical chemistry and botany, has been overlooked, and all are explained as to their derivation and meaning, the correct pronunciation being indicated by an equivalent English spelling, if necessary, or more frequently by dividing the words into syllables, and in connection with accentuation marks and with signs indicating the proper sounds of the vowels and of some of the consonants. The names of a large number of natural orders, of genera and of species of

plants have been admitted, which have attracted more or less attention as remedies, or which are cultivated for ornament; usually the common name of the plant is also given, in addition to its habitat, the part used and the medical properties, thus affording concise references which will often prove quite convenient. Considering the multitude of plants which enjoy a local or more extended reputation, it is not to be expected that the names of all should have found a place here; indeed, omissions may usually be pointed out in works devoted especially to medical botany, and it is therefore no fault that occasionally the name of an American plant like Mahonia is not found, while others which are now rarely met with in medical or pharmaceutical literature have their allotted place. In very rare cases only, as far as we have examined the text, could we wish for corrections or for more exact explanations; thus on page 198 Dryobalanops camphora is said to be "the tree which affords camphor in greatest quantity," and on page 750 triticin is stated to be "the gluten of wheat." That the names of all drugs, chemicals and pharmaceuticals, recognized by the present or former Pharmacopœia are mentioned and explained with reference to the authority, falls very properly within the scope of the work, but we doubt the utility of giving working formulas for tinctures, troches and the like; it seems to us that for a pronouncing dictionary simple explanations are quite appropriate and sufficient, such as have been made use of for most of the extracts and fluid extracts. For example: Extract. Colocynth. comp. is defined to be "a preparation containing colocynth, aloes, cardamom and scammony" (and soap might have been added); Extract. Gentianæ, "an aqueous extract of gentian;" Extr. Valer. fluid., "a fluid extract of valerian, one cubic centimetre representing one gramme of valerian;" the processes have been very properly omitted in these cases.

For some years past the word *official* has been used by some authors to denote such articles which are recognized by the pharmacopœias. Dr. Thomas, in not admitting this word, seems to consider the above application as being improper, with which view we coincide, preferring the adjective *pharmacopœial*, "of, or belonging to, a pharmacopœia," as defined by the author. His definition for *officinal* is "a term applied to such medicines as are directed by the colleges to be prepared or kept in shops."

Having thus spoken at length of the dictionary itself, and explained its great usefulness to the pharmacist and physician, as well as to the student, we can only briefly refer to the Appendix, the first eighteen pages of which, under the title of "explanation of Latin terms, phrases, etc.," give the rules and examples of the declension of nouns, adjectives and pronouns; the comparison, use and application of adjectives, etc., and contain several tables of nouns and adjectives, grouped together and selected with special reference to pharmacy and medicine.

The chapter "on writing prescriptions" addresses itself more particularly to the physician and medical student, with reference to the proper construction of prescriptions as far as language is concerned, and is followed by tables of doses, of chemical symbols, of the orders and families of the living mammalia, and of weights and measures.

It will be seen from the foregoing that this book possesses great value as

a lexicon, and is very useful also in other respects; as a work for frequent reference by the pharmacist, physician and student, it is heartily recommended.

Fownes' Manual of Chemistry, theoretical and practical. A new American from the twelfth English edition, embodying Watts' "Physical and Inorganic Chemistry." With 168 illustrations. Philadelphia: Lea Brothers & Co., 1885. 12mo, pp. 1056. Price, cloth, $2.75; leather, $3 25.

Nearly thirty-seven years have gone by since the original author of this work, George Fownes, died in the prime of his life, and although a number of revised editions have since been published, the author's name has been retained with them. But it is evident that with the rapid progress made during that period in physics and chemistry very little remains of the original work, so that its present shape is due to the literary labors of its principal reviser, Henry Watts. The death of the latter interrupted the labors of remodelling; however, a considerable portion having been accomplished, this, comprising physical and inorganic chemistry, was reviewed in last year's "Journal." The volume now before us consists of this portion, together with the organic chemistry revised a few years ago.

Applied Medical Chemistry. A manual for students and practitioners of Medicine. By Lawrence Wolff, M.D., Demonstrator of Chemistry, Jefferson Medical College, etc. Philadelphia: P. Blakiston, Son & Co., 1885. 8vo, pp. 174. Price $1.50.

The necessity being admitted for medical men to possess a practical knowledge of chemistry in its various applications to medical science, a guide for laboratory work becomes very desirable, and this is well provided for by the work before us. It is divided into five parts, which treat of apparatus and manipulations, chemistry of poisons (poisonous metals and acids), physiological chemistry (pigments, carbohydrates, fats, etc.), excretions and concretions (urine, bile, fæces), and sanitary chemistry (air, water, milk, flour, preserves, fermented liquors, pharmaceutical preparations). The arrangement is made in accordance with the author's system of demonstration, and we think will be found to be useful and convenient. The whole work is concisely written; the descriptions of compounds as well as of reactions, though designedly brief, give, as a rule, the important characteristics; yet some of the reactions would appear to deserve additional details, as for instance the difference between antimony and copper in the application of Reinsch's test. A very useful addition to each part is a syllabus of such operations and processes which the student should perform to thoroughly familiarize himself with the different subjects. The appendix contains a brief but valuable account of the ptomaines, a number of useful tables, and a good index.

The work will doubtless be productive of much good in acquainting the medical student with the essentials of such investigations which he may be called upon to perform as a part of his professional duties; and owing to its conciseness and accuracy will also prove of benefit to pharmacists and others who may not find it convenient to consult more extensive volumes on the characters and analysis of substances embraced within the scope of Dr. Wolff's book.

The Physician's Visiting List for 1886. Philadelphia: P. Blakiston, Son & Co.

This is the thirty-fifth yearly issue, and as heretofore is published in several sizes.

The Medical News Visiting List, 1886. Philadelphia: Lea Brothers & Co.

This visting list makes its appearance for the first time, we believe, and in its red seal binding and gilt edges is quite attractive. Though the pages are somewhat wider and longer than has been customary with similar publications, it is neither unhandy for being carried in the pocket, nor inconvenient for ready use as a memorandum book. The 48 pages of printed text contain, among others, lists of incompatibles, antidotes and doses, a therapeutic table, and directions for the ligation of arteries, for the use of disinfectants, for the examination of urine, etc. The tables of weights and measures are supplemented by a graphic chart, showing at a glance the correct equivalents of centimeters and inches, of grains and decigrams, of drachms or ounces and grams, of minims, fluidrachms or fluidounces and cubic centimeters, and of the degrees of the centigrade and Fahrenheit thermometer scales. About 200 blank pages, suitably arranged, are intended for the necessary records of a practice aggregating thirty patients per day. This visiting list is published at the price of $1, and is provided with patent thumb-letter index for rapid use, at 25 cents additional.

Proceedings of State Pharmaceutical Associations for 1885.

The following reports of meetings held during the present year, of which condensed accounts were published in our July number, have been received, in addition to those previously noticed:

Alabama; pp. 26. The fifth annual meeting will be held at Birmingham, on the second Tuesday of May, 1886; G. M. Bains, local secretary.

Indiana; pp. 113. The fifth meeting will take place at Lafayette, at the call of the Executive Committee; David Hilt, local secretary.

Kentucky; pp. 54. The ninth meeting will convene at Bowling Green, on the first Wednesday in May, 1886; Wm. Turner, corresponding secretary.

Louisiana; pp. 54. The fourth meeting will assemble in New Orleans, on the third Wednesday in April, 1886; Mrs. E. Rudolf, corresponding secretary.

Maryland. Proceedings for 1884, pp. 58; for 1885, pp. 58. The fourth meeting will convene in Annapolis, on the first Tuesday in June, 1886; M. L. Byers, Hagerstown, secretary.

Nebraska; pp. 43. The fifth meeting will be held in Omaha, on the second Tuesday in May, 1886; Chas. J. Danbach, local secretary.

New York; pp. 324. The eighth meeting will take place in Rochester, on the second Tuesday of June, 1886; C. H. Haskin, local secretary.

Ohio; pp. 157. The eighth meeting will be held in Springfield, June 2, 1886; Chas. Ludlow, assistant secretary.

Pennsylvania; pp. 182. The ninth meeting will convene in Lebanon, on the second Tuesday in June, 1886; Geo. R. Ross, assistant secretary.

Virginia; pp. 81. The fifth meeting will assemble in Alexandria, on the second Tuesday of May, 1886; Edgar Warfield, local secretary.

Wisconsin; pp. 87. The seventh meeting will take place at Fond du Lac, August 10, 1886; F. M. Givings, local secretary.

Grundlagen der Pharmacognosie. Einleitung in das Studium der Rohstoffe des Pflanzenreiches. Von F. A Flückiger und A. Tschirch. Berlin: Julius Springer, 1885. 8vo, pp. 257.

Principles of Pharmacognosy. Introduction into the study of the crude products of the vegetable kingdom.

When the first edition of this work made its appearance, in 1873, it was duly noticed in this Journal; and now, on the publication of the second and enlarged edition, we may refer to what we then said concerning the importance of such a treatise as a guide in the preliminary study of histology, preceding the study of vegetable drugs.

In this new edition the arrangement of the material remains in the main as before, and it is chiefly in the details that differences are observed, not merely in incorporating the results of the more recent investigations, but also in the enlarged scope.

The first part of the work, relating to the study of materia medica in general, has been revised and rewritten by Prof. Flückiger, in his usual clear and comprehensive manner. The second part of the work, relating to morphology and anatomy, has been rewritten and materially enlarged by Prof. Tschirch. After considering the various morphological parts of plants, such as roots, rhizomes, wood, bark, leaves, etc., the remaining portion, about two-thirds of the work, is devoted to vegetable anatomy, beginning with the cell, its contents, the cell wall, the cell forms, etc., and passing then to the different tissues, keeping in view, besides the anatomical structure, also the physiological functions of the same. The different conditions of the tissues, and the development of the various forms, are explained and illustrated almost exclusively from officinal drugs, or from parts of plants in which officinal secretions or excretions are produced; the study of vegetable anatomy is thus invested with peculiar interest to the student of materia medica. A brief chapter on pathological growths, galls, and another on micro-chemical reagents conclude the work.

The subject matter of the work, the lucid and attractive manner of its treatment, the literary references, and the handsome illustrations (186 in number), all combine to make the work a most valuable one; and we are pleased to learn that it is likely to become also accessible to those who are not conversant with the German language, since Prof. F. B. Power has undertaken its translation into English.

Milk Analysis and Infant Feeding. A practical treatise on the examination of human and cows' milk, cream, condensed milk, etc., and directions as to the diet of young infants. By Arthur V. Meigs, M.D., etc. Philadelphia: P. Blakiston, Son & Co., 1885. 12mo, pp. 102. Price, in cloth, $1.

From a large number of analyses made by the author the conclusion is arrived at that normal human milk has an alkaline reaction, and contains about 1 per cent. of casein, the average composition of the milk of forty-three women being water 87·163, fat 4·283, casein 1·046, sugar 7·407 and ash

101. Based upon these results and upon the composition of ordinarily good milk and cream, which are easily procurable in most cities, the infants' food is recommended to be prepared by mixing two tablespoonfuls of cream, one of milk, two of lime water and three of sugar water, the latter to be prepared by dissolving 17¾ drachms of pure milk sugar in 1 pint of water.

Tracts on Massage. No. II. The physiological effects of Massage. Translated from the German of Leibmayr, with notes, by Benjamin Lee, A.M., M.D., etc. Philadelphia, 1885. Pp. 46. Price 25 cents.

The tract shows that the object of massage is to arouse the normal physiological processes of the organism to increased activity, to excite a more vigorous tissue-transformation and interchange, and to reduce congestions and inflammations; and that it is also the most efficient means of promoting the absorption of all pathological products and deposits which can be thrown back into the general circulation without risk to the system.

Fourth Annual Report of the Illinois Board of Pharmacy; with Abstract of State Pharmacy Register. Springfield, Ill., 1885. 8vo, pp. 200.

The Board consists of Geo. Buck, Chicago; John E. Espey, Bloomington; Herman Schroeder, Quincy; Albert E. Ebert, Chicago, and Charles W. Day, Springfield.

Second Annual Report of the State Agricultural Station at Amherst, Mass. Boston, 1885. 8vo, pp. 166.

New York Cancer Hospital. First annual report. 1885.

Duty of the State to the Medical Profession. An address delivered before the Medical Alumni Association of the University of Michigan, June 24, 1885, by Conrad George, M.D., Ann Arbor, Mich. Pp. 11.

Reprint from the "Physician and Surgeon."

An Address on Cholera Infantum. By William Perry Watson, A.M., M.D., Jersey City, N. J. Pp. 21.

Reprint from "Archives of Pediatrics."

The Therapeutics of high temperatures in young children. By William P. Watson, A.M., M.D., Jersey City, N. J.

Reprint from "Archives of Pediatrics."

Observations on several Zoogloeæ and related forms. By William Trelease, Sc.D. Pp. 24.

Reprint from "Studies from the Biological laboratory of the John Hopkins University," Vol. III.

The spot disease of Strawberry leaves, Ramularia Tulasnei, Sacc. By Wm. Trelease. Pp. 20.

From the second annual report of the Wisconsin Agricultural Experiment Station.

A Manual of Weights, Measures and Specific Gravity, including principles of metrology; the weights and measures now in use; weight and volume, and their reciprocal relations; weighing and measuring; balances (scales) and weights; measures of capacity; specific weight and specific volume and their determination and practical applications; with rules and tables. By Oscar Oldberg, Pharm.D., Professor of Pharmacy and director of the pharmaceutical laboratory of the Chicago College of Pharmacy. Chicago: published by the Author, 1885. 8vo, pp. 238.

The confusion which has heretofore existed in medical metrology has been, to a considerable extent, done away with by the gradual introduction of the metric system in most civilized countries. It cannot be denied that this system in English-speaking countries has not yet gained a popular foothold to such a degree as had been anticipated by its more sanguine advocates; but it should also be remembered that in France where the system was perfected and first legally introduced, forty or fifty years were necessary before it was thoroughly understood and used by the general public, while at the present time scientists throughout the whole world are not only familiar with it, but employ it in their investigations. We, therefore, regard its general use merely as a question of time. This would probably be favored, if existing weights were so far modified as to have a simple relation to the metric units; at any rate an accurate relation is as desirable as between the units of weight and measure in common use.

In Great Britain the imperial fluidounce in use, at 62°F., contains exactly one avoirdupois ounce = 437½ troygrains of water; but neither the multiples nor the subdivisions agree between weight and measure, or have any simple relation to the troygrains, except that the imperial gallon is equal to 10 avoirdupois pounds or 70,000 troygrains. The wine measure in use in the United States shows no such relation to either avoirdupois or to troyweight; but the subdivisions of the fluidounce adopted for medical and pharmaceutical use, correspond to the subdivisions of the troyounce, though, necessarily, there cannot be a simple equivalent between the corresponding weights and measures. To secure such a simple relation the author proposes that the ounce be made equal to 32 grams and the fluidounce to 32 cubic centimeters; by dividing these into eight parts, the drachm would be equal to 4 grams and the fluidrachm to 4 cubic centimeters. Discarding the scruples the units would then be the gram and the cubic centimeter or fluigram, and by dividing these into sixteen parts, the grain and the minim would be obtained, differing but very slightly from the same medicinal weights as at present used. Without materially altering the present values, a simple relation would be established between apothecaries' weights and measures and between these and the metric system, and at the same time the larger units could be repeatedly divided by two without fractions until the new grain and new minim were reached. A fluidounce of water at its greatest density would then weigh exactly one (new) ounce; but if it was made to weigh that at a medium temperature of 20° or 22°C., the volume would be about ¼ per cent. greater than 32 cubic centimeters.

The volume deserves to be carefully read and considered by physicians and pharmacists, even though the reader may not agree with all the views advanced by the author.

OBITUARY.

HENRY B. PARSONS, one of the most talented and indefatigable of the younger American chemists, died August 21st, at Tucson, Arizona, aged 30 years. He was born in Syria, where his father was stationed as a missionary, and was educated in the United States, graduating as Pharmaceutical Chemist from the University of Michigan in 1876. He retained his connection with the University as assistant in the school of pharmacy for the following two years, and for the next three years accepted the position of Assistant Chemist in the Agricultural Department at Washington, occupying also for one session the chair of Materia Medica and Botany in the National College of Pharmacy. In 1881 he removed to New York, to take charge of the laboratory of W. H. Schieffelin & Co., and subsequently became editor of the "Druggists' Circular." In these various positions, as well as a member of the Committee of Revision of the Pharmacopœia, of the New York College of Pharmacy, of the New York State Pharmaceutical Association, and of the American Pharmaceutical Association, he did the work assigned to him thoroughly and well. His sound knowledge, his skill as an experimenter, and his clearness as an observer, had opened for him a career of usefulness, which, measured by the results of the past, gave greater promise for the future, and his modest and genial disposition secured him a large circle of sincere friends.

DR. WILLIAM BENJAMIN CARPENTER, the eminent physiologist, died in London, November 10th, at the age of 72, from the effect of burns caused by the upsetting of a spirit lamp while he was taking a vapor bath for rheumatism. He was widely known as an author on human and comparative physiology and through his researches on the Foraminifera, and other low forms of life. He paid a visit to the American Pharmaceutical Association, at its meeting at Niagara Falls, in 1882.

Notice of the death of the following Graduates of the Philadelphia College of Pharmacy has been received:

WILLIAM CARLTON BOYNTON, class 1884, died at his residence, in Auburn, Me., August 5, 1885, of typhoid fever. He had been a student at the Jefferson Medical College for one term.

FRANKLIN S. GARMAN, class 1872, died July 1, 1884, at his home in Lykens, Pa.

JEFFERSON OXLEY, class 1872, died at Nicholasville, Ky., October 11, 1885, of consumption, aged 43 years. As a subject for his thesis he investigated Gaultheria and Epigæa, and proved in the leaves the presence of arbutin and urson, which principles are now known to exist in many ericaceous plants. He was an ex-president of the Kentucky Pharmaceutical Association.

JOHN N. SHOFFNER, class 1868, died near Loudonville, O., August 24, 1885, from the effect of a wound received near Haley, Idaho. He was formerly in business in Bethlehem, and his remains were interred at his native place, Norristown.

INDEX.

TO VOL. LVII (VOL. XV, FOURTH SERIES), OF THE AMERICAN JOURNAL OF PHARMACY.